

ANNUAL MANAGEMENT REPORT YUKON AREA, 1998



Regional Information Report¹ No. 3A99-26

Alaska Department of Fish and Game
Division of Commercial Fisheries, AYK Region
333 Raspberry Road
Anchorage, Alaska 99518

June 1999

¹ The Regional Information Report Series was established in 1987 to provide an information access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc informational purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without prior approval of the author or the Division of Commercial Fisheries.

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PRESENTATION

This report summarizes the 1998 season and historical information concerning the subsistence, personal use and commercial fisheries in the Yukon Area. Information from selected Yukon Area research and monitoring projects are also summarized in this report. Complete documentation of these projects and results may appear in separate reports. Some of the data presented are preliminary and may be presented with minor differences in future reports.

To assist the reader, this report is organized into the following four sections:

1. *Salmon Fishery:* This section presents a description of the area, fishery resources, and fisheries management practices.
2. *Area Salmon Report:* This section presents a comprehensive report of the 1998 salmon fisheries and makes comparisons with previous years.
3. *Cape Romanzof District Herring Fishery:* This section presents a description of the area, fishery resources, fisheries and management practices, and summary of the 1998 herring fishery.
4. *Other Marine and Freshwater Finfish Fisheries:* This section presents a description of the fishery resources and finfish freshwater fisheries other than salmon and herring.

In order to facilitate use of this report, salmon data has been separated into current year tables and appendices where most of the historical salmon information appears. Current year and historical information for herring and freshwater finfish data are also presented in the appendices.

In the following text and tables, catch-per-unit-effort is obtained by dividing the total fishermen hours into the catch for the corresponding period of time. Commercial fishing effort has been computed using the assumption that if a permit holder delivers in a given fishing period, the fisherman fished the entire period. Total fishermen is the number of fishermen who made at least one delivery during the corresponding period of time (e.g. a given fishing period, summer season, fall season or for the entire fishing season). There are fishermen who make only one delivery during the entire fishing season. The summer season refers to the fishing associated with the chinook and summer chum salmon migration. Fall season refers to the fishing associated with the fall chum and coho salmon migration.

Although not included in the Yukon Area, the Colville River commercial freshwater finfish fishery is also documented in this report.

A select list of acronyms, abbreviations, and symbols, in order as they first appear in this report, are as follows:

ADA	Americans with Disabilities Act
TDD	Telecommunication Devise for the Deaf
OEO	Office of Equal Opportunity
CF	Division of Commercial Fisheries
ADF&G	Alaska Department of Fish and Game
DFO	Canadian Department of Fisheries and Oceans
BOF	Alaska Board of Fisheries
R&E Fund	U.S./Canada Restoration and Enhancement Fund
USFWS	United States Fish and Wildlife Services
TCC	Tanana Chiefs Conference, Inc.
BSFA	Bering Sea Fishermen's Association
NMFS	National Marine Fisheries Service
FWP	Division of Fish and Wildlife Protection
CFEC	Commercial Fisheries Entry Commission
U.S.	United States
Agreement	Interim Yukon River Salmon Agreement
Panel	U.S./Canada Yukon River Panel
JTC	Joint Technical Committee
AYK	Arctic-Yukon-Kuskokwim
BEG	Biological Escapement Goal
YRDFA	Yukon River Drainage Fisheries Association
YSC	Yukon Salmon Committee
UFA	Comprehensive Land Claim Umbrella Final Agreement
DCR	Delta Clearwater River
NTC	Nulato Tribal Council
CPUE	Catch-Per-Unit-Effort
VHF	Very High Frequency
BLM	Bureau of Land Management
EEZ	U.S. Exclusive Economic Zone
\$	U.S. Dollar
>	Greater Than
%	Percent

YUKON AREA INTRODUCTION

The Division of Commercial Fisheries (CF) of the Alaska Department of Fish and Game (ADF&G) is responsible for the management of subsistence, personal use, and commercial fisheries in the Yukon Area. This annual management report details the activities of the CF in the Yukon Area during 1998.

The Yukon Area includes all waters of the Yukon River drainage in Alaska and all coastal waters of Alaska from Point Romanof southward to Naskonat Peninsula (Figure 1). Important subsistence and commercial fisheries include salmon and herring. Other marine and freshwater finfish are harvested primarily for subsistence use. A list of indigenous fishes found in the Yukon Area is provided in Appendix A.1.

SALMON FISHERY

Description of Area and District Boundaries

The Yukon River is the largest river in Alaska and the fifth largest drainage in North America. The river originates in British Columbia, Canada, within 30 miles of the Gulf of Alaska, and flows over 2,300 miles to its mouths on the Bering Sea. It drains an area of approximately 330,000 square miles or approximately 35 percent of the state. With the possible exception of a few fish taken near the mouth or in the adjacent coastal waters, only salmon of Yukon River origin are harvested in the Yukon Area.

Excluding the greater Fairbanks area (approximately 82,000 residents), there are approximately 22,000 rural residents in the Alaskan portion of the drainage (Williams 1998), the majority of whom reside in 43 small villages scattered along the coast and major river systems. Most of these people are dependent to varying degrees on fish and game resources for their livelihood.

Commercial salmon fishing is allowed along the entire 1,200 mile length of the mainstem Yukon River in Alaska and the lower 225 miles of the Tanana River. The Yukon Area is divided into seven districts and ten subdistricts for management and regulatory purposes (Figure 2). The district boundaries were originally established in 1961 and redefined in 1962, 1974, 1978, 1994 and 1996. The Lower Yukon Area (Coastal District, Districts 1, 2, and 3) includes the coastal waters of the Yukon Area and that portion of the Yukon River drainage from the mouth to Old Paradise Village, river mile 301. The Coastal District was established in 1994, redefined in 1996 and is open only to subsistence fishing. The Upper Yukon Area (Districts 4, 5, and 6) is that portion of the Yukon River drainage upstream of Old Paradise Village to the border with Canada. The districts and subdistricts are further divided into 28 statistical areas for management and reporting purposes (Figures 3-8). Yukon River miles are listed in Appendix A.2.

In addition, Aboriginal, commercial, sport, and domestic salmon fisheries also occur in the Canadian portion of the Yukon River drainage. The Canadian Department of Fisheries and Oceans (DFO) conducts the corresponding fishery management activities.

Fishery Resources

Five species of Pacific salmon are found in the Yukon River drainage: chinook salmon (*Oncorhynchus tshawytscha*), chum salmon (*O. keta*), coho salmon (*O. kisutch*), pink salmon (*O. gorbuscha*), and sockeye salmon (*O. nerka*).

Chinook salmon are the largest size of fish found in the Yukon River, ranging from 2 to 90 pounds. In the Lower Yukon Area commercial fishery, chinook salmon typically average between 19 and 25 pounds. Spawning populations of chinook salmon have been documented throughout the Yukon River drainage from the Archuelinguk River, located approximately 80 miles from the mouth, to as far upstream as the headwaters of the drainage in Canada, nearly 2,000 miles from the mouth. Chinook salmon begin entering the mouth of the Yukon River soon after ice breakup, during late May or early June, and continue through mid-July.

The chum salmon return is made up of a genetically distinct early summer chum salmon run and a later fall chum salmon run. Summer chum salmon are characterized by: earlier run timing (early June to mid-July at the mouth), rapid maturation in freshwater, smaller size (average 6 to 7 pounds), and larger population size. Summer chum salmon spawn primarily in run-off streams in the lower 500 miles of the drainage and in the Tanana River drainage. Fall chum salmon are mainly distinguished by: later run timing (mid-July to early September at the mouth), robust body shape, larger size (average 7 to 8 pounds) and smaller population size. Fall chum salmon primarily spawn in the upper portion of the drainage in streams that are spring fed. Major fall chum salmon spawning areas include the Tanana and Porcupine River systems, the Chandalar River, and various streams in Yukon Territory, Canada, including the mainstem Yukon River.

Coho salmon enter the Yukon River from late July through September and average approximately 7 pounds in weight. Coho salmon spawn discontinuously throughout the Alaskan portion of the drainage, primarily in tributaries in the lower 700 miles of the drainage and in the Tanana River drainage. Major spawning populations of coho salmon have been documented in tributaries of the Tanana River drainage and the Andreafsky and Anvik Rivers.

Pink salmon enter the lower river from late June to late July and average approximately 2 to 3 pounds in weight. Pink salmon primarily spawn in the lower portion of the drainage, downstream of the village of Grayling, river mile 336. However, pink salmon have been caught in the mainstem Yukon River upstream as far as Ruby, river mile 601 (ADF&G 1983). In the past decade, pink salmon have exhibited a high and low abundance two-year-cycle. High abundance has typically occurred during the even numbered years.

Sockeye salmon are uncommon in the Yukon River drainage, and only a few individuals are caught each year. Sockeye salmon have been reported in the mainstem Yukon River upstream of Rampart, river mile 763. Observations of sockeye salmon have occurred in the Innoko (ADF&G 1986), Kantishna (L. Barton, ADF&G, Fairbanks, personal communication 1988), Anvik (M. Erickson, ADF&G, Anchorage, personal communication 1989), Andreafsky (Tobin and Harper 1995) and Gisasa (Wiswar 1999) River drainages.

Management

The policy of ADF&G is to manage the salmon runs to the extent possible for maximum sustained

yield, unless otherwise directed by regulation (ADF&G 1992). In the Yukon Area, ADF&G lacks the necessary management program and scientific information to manage for maximum sustained yield. Management of the Yukon River salmon fishery is complex due to the inability to determine stock specific abundance and timing, overlapping multispecies salmon runs, the increasing efficiency of the commercial fleet, allocation issues, and the immense size of the Yukon River drainage. The Alaska State Legislature and the Alaska Board of Fisheries (BOF) have designated subsistence use as the highest priority among beneficial uses of the resource. To maintain the subsistence priority and to provide for spawning escapements to ensure sustainable yield, management of the Yukon River salmon fisheries must be managed conservatively.

Salmon fisheries within the Yukon River drainage may harvest stocks that are up to several weeks and over a thousand miles from their spawning grounds. Since the Yukon River commercial fishery is a mixed stock fishery, some tributary populations may be under or over harvested in relation to their actual abundance. Based on current knowledge, it is not possible to manage for individual stocks in areas where commercial fishing occurs.

Primary tools used to manage the commercial salmon fisheries are guideline harvest ranges established by the BOF (Table 1) and emergency order authority, which is used to implement time and area openings or closures and mesh size restrictions. Guideline harvest ranges have been established for chinook, summer chum, and fall chum salmon commercial fisheries throughout the Alaskan portion of the drainage. ADF&G attempts to manage the commercial salmon fisheries so the harvest in each district or subdistrict is proportionally similar within their respective guideline harvest ranges.

The BOF met in Fairbanks in December 1997 to address Yukon Area finfish proposals. Substantial changes were made which affected management of the various fisheries for the 1998 season. New regulations and changes to existing regulations that were adopted by the BOF for the Yukon Area are shown in Attachment 1.

During the fishing season, management is based on preseason projections and inseason run assessment. Inseason run assessment includes abundance indices from test fisheries, passage estimates from various sonar, mark recapture projects, and spawning escapement and harvest data. Since 1995 the main river sonar project at Pilot Station has provided reliable inseason estimates of salmon passage for fisheries management. The level of subsistence, personal use, and commercial harvests can be adjusted through the use of emergency orders to control time and area openings and closures. Emergency orders are announced on local radio stations and by VHF radios from ADF&G field offices or camps. Corresponding news releases are transmitted by fax to select villages, processors, buyers and fishermen. Additionally, select processors, buyers and fishermen are notified of the emergency order by telephone.

The ADF&G, federal agencies, native organizations, and fishermen's groups operate various projects to obtain biological information necessary for management of the salmon runs. In 1998, the following projects were implemented:

1. *Test Fishing:* The lower Yukon River ADF&G test fishing projects located at South, Middle and North Mouths utilized set gillnets from late May through late August or early September to capture chinook, chum, and coho salmon. Catch rates and species composition provides run timing, age composition, and an index of relative abundance for comparisons between years and within that year. A contract fisherman operated a Tanana River test fish wheel near the village of Nenana from July through early October to monitor chinook, summer chum, fall chum, and coho salmon passages. To index the fall chum salmon run, the

U.S./Canada Restoration and Enhancement Fund (R&E Fund) provided the support needed to operate test fish wheels on the north (right) and south (left) banks of the mainstem Yukon River near the village of Tanana. Additionally, the R&E Fund provided the support necessary to operate a drift test fishery near Mountain Village to index the fall chum and coho salmon runs.

2. *Tributary Sonar Projects:* Hydroacoustic equipment was operated in the Anvik and Sheenjek Rivers to estimate summer and fall chum salmon spawning escapements, respectively. The United States Fish and Wildlife Service (USFWS) operated hydroacoustic equipment in the Chandalar River to estimate fall chum salmon escapement.
3. *Main River Sonar Project:* Hydroacoustic equipment was operated in the mainstem Yukon River near Pilot Station to obtain inseason salmon passage estimates by species.
4. *Stock Separation and Age Composition:* Scale and vertebra samples were collected from salmon harvests and escapements to determine age composition of the 1998 runs. Scale samples of chinook were also utilized to apportion the harvest to region of spawning, using scale pattern analysis techniques.
5. *Data Processing of Commercial Fishery Statistics:* Lower Yukon Area commercial harvest and effort data were obtained from fish tickets processed at the ADF&G Emmonak field office. Similarly, Upper Yukon Area commercial harvest and effort data were compiled by the Fairbanks office.
6. *Aerial and Ground Surveys of Salmon Spawning Streams:* Aerial surveys were flown to monitor spawning escapements in major index systems throughout the Yukon River drainage. Additionally, fall chum salmon foot surveys were conducted at selected areas in the Tanana River drainage. Tanana Chiefs Conference (TCC) and the Bering Sea Fishermen's Association (BSFA) conducted aerial, boat, and ground surveys in the Nenana River drainage, to estimate fall chum and coho salmon escapement.
7. *Tagging Projects:* A salmon mark and recapture project was conducted by DFO to estimate the abundance of chinook and fall chum salmon in the Canadian mainstem Yukon River. ADF&G and BSFA conducted a tagging project on the Tanana River to estimate fall chum salmon abundance upriver of the confluence of the Kantishna River. USFWS conducted a fall chum salmon mark and recapture project to estimate fall chum salmon passage in the mainstem Yukon River near Rampart. USFWS and National Marine Fisheries Service (NMFS) also deployed radio tags on fall chum salmon from this site in 1998.
8. *Tower Projects:* ADF&G, Division of Sport Fish conducted counting tower projects on the Chena, Salcha, and Chatanika Rivers in 1998. Tower projects on the Chena and Salcha Rivers estimated chinook and summer chum salmon escapements to those systems, while the Chatanika River tower project estimated only chinook salmon escapement. Cooperative counting tower projects were operated on the Nulato River (Nulato Tribal Council, BSFA, and ADF&G) and Clear Creek (Bureau of Land Management [BLM], BSFA, and USFWS), a tributary of the Hogatza River, to estimate chinook and summer chum salmon escapement. The Alaska Cooperative Extension Service in conjunction with BSFA and the City of Kaltag operated a tower to estimate chinook and summer chum salmon escapement in Kaltag Creek.

9. *Weir Projects:* USFWS operated weirs on the East Fork Andreafsky and Gisasa Rivers to estimate salmon escapement. The South Fork Koyukuk River weir did not operate in 1998 due to high water conditions. Similarly, BLM attempted to operate a weir on Beaver Creek to estimate chinook and summer chum salmon escapement but was unable to do so due to flooding. Healy Tri-Valley School, in cooperation with ADF&G, operated a weir on Lignite Creek to estimate coho salmon escapement.
10. *Subsistence and Personal Use Harvest:* In the majority of the Yukon Area, no regulatory requirement exists for fishermen to report their subsistence salmon harvest. To estimate the subsistence salmon harvest from villages within this area, ADF&G has implemented a voluntary survey program. In other portions of the Yukon Area, fishermen are required to obtain an annual subsistence or personal use household permit prior to fishing. In these areas, fishermen are required to document their harvest on the permit and return the permit to ADF&G at the end of the fishing season.

CF permanent full time staff assigned to the Yukon Area includes eight positions: two area management biologists (one summer season, one fall season), two assistant area management biologists, three research project biologists, and one field office assistant. In addition, approximately 30 seasonal employees annually assist in conducting various management and research projects. The CF staff also assists in the enforcement of regulations in cooperation with the Department of Public Safety, Division of Fish and Wildlife Protection (FWP).

State of Alaska funding for the Yukon Area salmon management and research program from July 1, 1997 through June 30, 1998 was approximately \$1.2 million. An additional \$631,700 was received by ADF&G through a federal U.S./Canada grant for Yukon River Salmon Negotiation Studies, including support for participation in negotiations-related meetings.

Alaskan Salmon Fishery Description

Subsistence Fishery

Yukon Area subsistence fishermen primarily use drift gillnets, set gillnets, and fish wheels to harvest salmon. Set gillnets are the primary gear type utilized throughout the Yukon Area. It is only legal to use drift gillnets to harvest salmon for subsistence in that portion of the Yukon River drainage below rivermile 514. Although fish wheels are a legal gear type for subsistence fishing throughout the drainage, they are essentially only used in the Upper Yukon Area.

Subsistence salmon fishing activities in the Yukon Area primarily occur from late May through early October. Salmon fishing in May and October is highly dependent on ice conditions on the river. Fishing activities are based either from a fish camp or home village. Extended family groups, which represent two or more households, often work together to harvest, cut and preserve salmon for subsistence use. Some households from communities not located along the mainstem Yukon River, such as Shageluk and Birch Creek, operate fish camps along the mainstem Yukon River.

A significant portion of the salmon harvested are frozen, dried, or smoked for later human consumption. The majority of the large (greater than 21 inches in length) chinook salmon harvested are used for human consumption. Although a large proportion of the small chinook salmon are also used for human consumption, a significant proportion of the small chinook

salmon, often referred to as "jacks," are used for dog food. Summer chum, fall chum, and coho salmon are also used for human consumption, however, a relatively large percentage of these salmon are harvested to feed dogs. Dogs are also fed scraps that become available during the processing of freshly harvested salmon, and relatively few whole fresh salmon are fed to dogs. The majority of the summer chum salmon is dried for later winter supply of dog food. Additionally, fall chum and coho salmon are commonly "cribbed" for dog food. Cribbing is the freezing of fish by natural air temperature for use later in the winter. There is usually little wastage of fish taken for subsistence purposes, although damp weather may cause some drying fish to spoil.

Many subsistence fishermen also participate in the commercial salmon fishery. During the Yukon Area commercial salmon fishing season, additional restrictions on subsistence salmon fishing may be required to assist in the enforcement of commercial fishing regulations. However, during the salmon fishing season, substantially more time is allowed for subsistence salmon fishing than for commercial fishing. Throughout most of the history of the Yukon Area commercial salmon fishery, commercial and subsistence fishing periods coincided. However, in 1993 the BOF adopted regulations which separated subsistence and commercial salmon fishing times in Districts 1, 2, and 3 and in the lower portion of District 4 (Subdistrict 4-A). In these areas, subsistence salmon fishing is allowed seven days per week until 24 hours prior to and following the commercial salmon fishing season. By regulation, once the commercial salmon season is open, subsistence salmon fishing is allowed except for 18 hours immediately before, during, and 12 hours after each District 1, 2 or 3 summer season commercial salmon fishing period. During the fall season in Districts 1, 2 and 3, subsistence salmon fishing may not occur 12 hours immediately before, during, and 12 hours after each commercial fishing period. In Subdistrict 4-A, subsistence salmon fishing may not occur 12 hours immediately before, during, and 12 hours after each commercial fishing period throughout the season.

In the upper portion of District 4 (Subdistricts 4-B and 4-C) and in Subdistricts 5-B and 5-C, subsistence salmon fishing is allowed seven days per week until 24 hours prior to and following the commercial salmon fishing season. In these areas, subsistence salmon fishing periods coincide with commercial salmon fishing periods. Additional subsistence-only salmon fishing periods are also allowed during the commercial salmon fishing season. In Subdistrict 5-A, subsistence fishing is allowed seven days a week until 24 hours prior to the commercial salmon fishing season. Since 1994, excluding 1998, the subsistence fishing schedule in Subdistrict 5-A allows subsistence fishing five days a week after closure of the commercial salmon fishing season. In 1998, Subdistrict 5-A returned to subsistence salmon fishing seven days a week based on actions taken by the BOF in December 1997 that relaxed restrictive elements of the 5 AAC 01.248. Toklat River Fall Chum Salmon Rebuilding Management Plan. In Subdistrict 5-D, subsistence salmon fishing is allowed seven days a week throughout the fishing season. Since 1988, subsistence fishing within the lower Tanana River drainage has been allowed for two 42-hour periods per week throughout the fishing season unless altered by emergency order. In the upper Tanana River drainage, subsistence fishing is allowed seven days a week throughout the fishing season.

Yukon Area subsistence salmon fishery and harvest information has been collected by ADF&G since 1961 (Borba and Hamner 1998). Documentation of the subsistence harvest prior to 1961 is limited. However, early exploration reports attest to the importance of subsistence salmon harvests to people living in the Yukon River drainage (Zagoskin [1847] 1967; Allen 1887). Historical accounts document the use of large salmon harvests to support dogs, which were used as draft animals for transportation and packing (Richardson [1900] 1964; Gilbert and O'Malley 1921). Around 1930, the airplane began replacing the sled dog as a primary mail and supply carrier, which contributed to a gradual reduction in the need for subsistence salmon for dog food. Additionally, the introduction of

snow machines during the 1960s accelerated the decline of sled dogs and the associated need for subsistence salmon harvests to feed them.

During the early 1970s, additional employment opportunities, including commercial fishing activities, became available to rural residents (ADF&G 1985). From 1974 through 1977 the sale of subsistence caught salmon roe was legal. The slight increase in subsistence harvests observed in those years likely resulted from the legalization of the sale of subsistence caught salmon roe. Beginning in the early 1980s, there was a renewed interest in the recreational use and racing of sled dogs. As the number of dogs increased throughout the drainage, the corresponding need for subsistence salmon to feed dogs also increased. Recent survey information indicates that the practice of keeping sled dogs is much more common in the Upper Yukon Area than in the Lower Yukon Area. The number of dogs within a household is considered to be a major factor affecting the amount of subsistence salmon that a household needs.

Commercial-Related Harvests

Distinguishing between subsistence and commercial harvests has become more difficult with development of salmon fisheries in which commercial fishermen extract and only sell the roe. A stripped carcass refers to the female salmon flesh that remains after the roe has been removed and sold commercially. Stripped carcasses are a byproduct of the commercial roe fishery and are available to meet subsistence needs. Subsistence salmon harvests are defined as those that are harvested under subsistence fishing regulations. Salmon taken under commercial fishing regulations that provide for both subsistence and commercial use are assigned to a special category referred to as *commercial-related* harvest. Commercial roe fisheries began in 1978 in the Upper Yukon Area, and the first sale of salmon roe occurred in the Lower Yukon Area in 1996. Commercial-related salmon harvests can be combined with the subsistence harvest estimate to provide the total potential subsistence utilization. The commercial-related harvests can also be combined with the salmon sold in the round to provide an estimate of the commercial harvest.

Except for Subdistrict 4-A, in most of the Yukon Area the commercial-related harvest is a small proportion of the subsistence utilization. In these areas, the relatively large local subsistence need easily absorb the commercial-related harvest. However, in Subdistrict 4-A, in most years since 1981, the number of female summer chum salmon carcasses available from the commercial roe fishery, along with the incidental harvest of male chum salmon, has been greater than the subsistence utilization levels documented prior to the commercial roe fisheries existence. ADF&G estimates the number of male and female summer chum salmon harvested during a commercial fishing period from the pounds of roe sold. The method expands the roe to estimate numbers of fish harvested by using the observed pounds of summer chum salmon roe per female and the sex ratio information collected during each commercial period.

From 1980 to 1990, subsistence survey questions in most areas were not structured to identify the commercial-related harvests. During these years it is believed that many of the commercial-related salmon harvests were reported as subsistence harvests. In 1984, the Division of Subsistence conducted the first subsistence surveys directed at addressing the amount of the commercial-related harvests in Subdistrict 4-A villages of Kaltag and Nulato. These surveys attempted to exclude the commercial-related summer chum salmon used for subsistence purposes from the subsistence harvest. As a result, the subsistence summer chum salmon harvest estimates for Kaltag and Nulato in 1984 were below harvest estimates for previous years. From 1986 to 1989 efforts to identify the commercial-related summer chum salmon harvest from the Subdistrict 4-A subsistence harvest estimates were continued. Although, during these years of transition, it is probable that some portion of the commercial-related harvest was still being reported as subsistence harvest. It was not until

1990 that survey questions and fishermen's reports resulted in satisfactory separation of the subsistence utilization into subsistence and commercial-related harvests.

Prior to 1990, the commercial harvest included the number of fish sold in the round and the number of females taken to produce the roe sold. Since 1990 by regulation, commercial-related harvests in Subdistrict 4-A are considered to be the estimated number of female salmon taken to produce the roe sold plus the estimated incidental harvest of male salmon. Although not required by regulation, ADF&G estimates the commercial harvest of summer chum salmon in Subdistricts 4-B and 4-C and in the lower Yukon Area in the same manner as in Subdistrict 4-A.

Prior to 1993, subsistence and commercial periods were conducted simultaneously, and therefore some salmon harvests during these periods could have occurred under subsistence regulations. Since 1993, the subsistence and commercial periods have been separated in Subdistrict 4-A, and all fish harvested and not sold in the round during the commercial periods are considered commercial-related.

Beginning in 1990, Subdistrict 4-A commercial fishermen have been required by regulation to report on fish tickets the number of male and female salmon harvested to produce the roe sold. An additional series of questions to address the usage of commercial-related harvests were added to the survey questionnaire of Subdistrict 4-A commercial fishermen during the 1992, 1993, and 1995 surveys. The additional survey questions in Subdistrict 4-A were initiated to investigate discrepancies between the different estimates of salmon harvested. In salmon roe fisheries within Subdistrict 4-A, ADF&G estimates the number of fish harvested based on the pounds of roe produced per female and the sex ratios observed during each commercial fishing period. These estimates were compared to what was reported on commercial fish tickets. The majority of the fishermen surveyed agreed that ADF&G's estimate based on sampling was a better representation of the actual kill. The additional survey has since been discontinued however, ADF&G continues to estimate the commercial-related harvests for all individuals that participate in commercial fisheries when selected to be surveyed in a given year. During the survey, ADF&G's estimate is brought to the attention of the fisherman for conformation. Because the additional survey also documented the practice by Subdistrict 4-A fishermen of releasing live male chum salmon directly back into the river during commercial roe fisheries the fishermen may still report commercial-related harvests that are less than ADF&G estimates.

In 1994, the BOF adopted regulations that allowed a commercial summer chum salmon fishery on the Anvik River (5 ACC 05.368. Anvik River Chum Salmon Fishery Management Plan). Except for 1998, a commercial summer cum salmon roe fishery has occurred in the Anvik River every year since the management plan was adopted. The Anvik River is within Subdistrict 4-A and has been managed as a terminal harvest commercial fishery. The Anvik River commercial summer chum salmon fishery involves only the sale of roe, which has resulted in additional stripped female summer chum salmon carcasses becoming available to subsistence users. Commercial-related harvests in the Anvik River fishery are based only on the estimated number of female salmon taken to produce the roe sold. The gear types utilized in this fishery generally allow for the release of male chum salmon.

Personal Use Fishery

Personal use fishing is considered a lower priority use of the resource than subsistence fishing. In 1986, subsistence fishing was limited to rural Alaskan residents. The BOF created personal use salmon fisheries in the Yukon Area for non-rural state residents. The regulation directed that fishermen residing within non-rural areas be considered personal use fishermen regardless of where they fished. Correspondingly, fishermen residing in rural areas were considered subsistence

fishermen regardless of where they fished. The residents of the greater Fairbanks area were considered non-rural fishermen. In 1987, a personal use fishery was implemented in the Yukon Area which initially only affected the fall chum salmon fishery. Beginning in 1988, personal use regulations were in effect for all salmon species in the Yukon Area. Under the statutes and regulations that were in effect from 1988 until July 1, 1990, Alaska residents domiciled in non-rural areas were prohibited from participating in subsistence fisheries. During that time, non-rural residents harvested salmon under personal use fishing regulations wherever they fished.

Effective July 1, 1990, the Alaska Supreme Court struck down the rural residency requirement for subsistence participation (*McDowell vs. State*). In that ruling, the Alaska Constitution prevented the allocation of fish and game to people based on the location of their residence. The result was that every Alaska resident became eligible for subsistence fishing. In effect, this decision made the personal use category obsolete in the Yukon Area. Anyone eligible for a personal use permit could also obtain a less restrictive subsistence fishing permit. For this reason, no Yukon Area personal use salmon fishing permits were issued in 1991 and 1992.

During a special session in 1992, the legislature revised the subsistence law to allow the Joint Boards of Fisheries and Game to divide the state into subsistence and non-subsistence areas. Inside the non-subsistence areas, personal use fishing could be authorized by BOF, and the regulations, which allowed subsistence fishing, were repealed. The Fairbanks Nonsubsistence Area (Appendix D.8), the only non-subsistence area created in the Yukon Area, consists of the Fairbanks North Star Borough and surrounding areas. The Fairbanks Nonsubsistence Area includes the Tanana River drainage above the confluence of the Wood River upstream to the mouth of the Volkmar River on the north bank of the Tanana River and to the mouth of the Johnson River on the south bank of the Tanana River. During the 1993 fishing season, personal use fishery regulations were implemented in this area. In October 1993, the state superior court ruled in the *Kenaitze* case that the non-subsistence area provision of the 1992 subsistence law was unconstitutional because it discriminated between different areas of the state. Although the state was initially granted a stay on the effects of that decision pending appeal to the Supreme Court, the stay was vacated on April 11, 1994. With the stay lifted, the state was required to provide subsistence fishing in non-subsistence areas during the 1994 season. All Alaskan residents were again qualified as subsistence users during the 1994 fishing season and, although available, no personal use permits were issued.

On May 9, 1995, the Alaska Supreme Court reversed the superior court's ruling, upholding the constitutionality of the non-subsistence areas. Once again, the Joint Boards of Fisheries and Game adopted regulations that reestablished the Fairbanks Nonsubsistence Area. No subsistence fishing is allowed within non-subsistence areas, however, personal use fishing regulations are applicable. The non-subsistence area regulations primarily affected salmon fishermen within Subdistrict 6-C, which falls entirely within the boundaries of the Fairbanks Nonsubsistence Area. By regulation, Subdistrict 6-C personal use salmon fishery has a household permit limit of 10 chinook, 75 summer chum salmon and 75 fall chum and coho salmon combined. Additionally the fishery has a harvest limit of 750 chinook, 5,000 summer chum salmon, and 5,200 fall chum and coho salmon combined.

Commercial Fishery

The first recorded commercial salmon harvest in the Alaskan portion of the Yukon River drainage occurred in 1918. Relatively large harvests of chinook, chum, and coho salmon were taken during 1919 to 1921 (ADF&G 1985). The majority of these harvests were taken outside of the river mouth because of restrictions that were imposed within the river. The early commercial fishery was closed from 1925 to 1931 because of concerns for the existing large in-river subsistence fishery. Commercial fishing for chinook salmon was resumed at a reduced level in 1932 and has continued to

occur annually since that time. Commercial harvests of chum and/or coho salmon occurred during 1918 to 1921, 1952 to 1954, 1956, and since 1961.

During 1954 to 1960, a 65,000 chinook salmon quota was in effect for the Alaskan portion of the Yukon River. Of this total, not more than 50,000 fish could be taken below the mouth of the Anuk River (rivermile 63), 10,000 fish in the area between the mouths of the Anuk and Anvik Rivers, and 5,000 chinook salmon upstream from the confluence of the Anvik River. The current chinook salmon guideline harvest ranges have been in effect since 1981 (Appendix A.14). Chinook salmon commercial harvests began increasing during the late 1970s (Appendix A.4), because of increased efficiency of the fleet and, in some years, due to above average run strength. Concern for possible over-exploitation resulted in reduced harvests during the late 1980s.

Summer chum salmon commercial harvests increased greatly during the 1980s as a result of regulation changes (e.g., mesh size specifications and earlier openings), greater availability of processing facilities and tendering, higher exvessel prices, development of Japanese markets, and the occurrence of several very large runs. In February 1990, the BOF established a river-wide guideline harvest range of 400,000 to 1,200,000 summer chum salmon (Appendix A.15). The BOF established guideline harvest ranges for districts and subdistricts using the 1975 to 1989 average harvest shares. Summer chum salmon commercial harvests declined from 1990 through 1993 because of below average runs. Beginning in 1994, declining salmon flesh markets limited the harvest, particularly in the lower river. In March 1994, the BOF adopted 5 AAC 05.368. Anvik River Chum Salmon Fishery Management Plan, which established regulations allowing for a commercial summer chum salmon roe fishery within the Anvik River.

The directed commercial fishery for fall chum salmon began in 1961. Fall chum salmon commercial harvests increased beginning in 1979 (Appendix A.6). Low fall chum salmon spawning escapements in the mid-1980s resulted in more conservative management and reduced commercial harvests from 1986 to 1990. Guideline harvest ranges for fall chum salmon were reduced by the BOF in 1986, but the upper end increased to their original levels in 1990 (Appendix A.16). BOF adopted 5 AAC 01.249. Yukon River Drainage Fall Chum Salmon Management Plan in March 1994. The management plan has been reviewed and modified by the BOF several times since 1994. The 1998 management plan identified the need for 400,000 fall chum salmon for escapement and approximately 200,000 fall chum salmon to provide for Alaskan subsistence and Canadian harvests. Under the plan, which was in effect during 1998, commercial fishing in all districts was allowed only when the projected run size inseason was greater than 675,000 fall chum salmon. Additionally, since 1990 there has been an effort to rebuild both Canadian and Toklat River fall chum salmon stocks. Although both the Canadian and Toklat River fall chum salmon stocks have shown improvements, escapement levels observed to these areas were disappointing in 1998.

Coho salmon returns to the Yukon River are of lesser magnitude than fall chum salmon. Under the management strategy used in 1998, coho salmon are taken incidentally to the fall chum salmon commercial directed fishery. Pink salmon commercial harvests have been very small due to an extremely limited market for Yukon River pink salmon to date.

The majority of commercial fishermen are residents of the Yukon River drainage. The cash income derived from commercial salmon fishery has assisted many area residents in their subsistence life-style. For example, income earned from commercial fishing is often used to obtain hunting and fishing gear such as nets, boats, and outboard motors, which are utilized in subsistence activities.

Most commercial fishermen operate outboard powered skiffs of 18 to 24 feet in length. Very few skiffs utilize gillnet rollers or power reels of any type. The use of larger outboard motors (greater than 100 horsepower), VHF radios, and fish finders has increased the fleet efficiency.

The majority of the salmon harvest is presently processed as a fresh or frozen product in contrast to earlier years when canning and salting were of more importance (Appendix A.10). Currently, most salmon are processed at shore-based or floating operations, or transported by aircraft outside the area for processing. However, limited "value adding" products are now being produced within the Yukon Area. The purchasing of salmon roe directly from permit holders is prevalent primarily in the Upper Yukon Area. However, District 3 fishermen have also sold roe in recent years. Fish ticket reports containing a breakdown of salmon roe by species other than chum salmon have only been available since 1990. Prior to 1990, small amounts of chinook and coho salmon roe were reported as summer chum and fall chum salmon roe, respectively. A few salmon are sold to local markets. Small quantities of chinook, fall chum, and coho salmon are smoke-cured and sold as "strips," a local specialty product. In addition, undocumented quantities of chum and coho salmon are dried and sold or bartered as dog food.

Lower Yukon Area

Since the beginning of the commercial salmon fishery in 1918, the majority of the Yukon River harvest has occurred in Districts 1 and 2. With the advent of the Commercial Fisheries Limited Entry (CFEC) program in 1976, fishing effort in terms of the number of participants has stabilized, but efficiency of the fleet has increased. From 1988 through 1997, an average of 707 Lower Yukon Area CFEC gillnet permits have been issued annually (Appendix A.8). All Lower Yukon Area permits are designated as set gillnet, although either set or drift gillnets may be operated. With some restrictions, permit holders may transfer between Districts 1, 2, and 3 during the season. Set gillnets are more commonly used in coastal areas within the Yukon River delta. Drift gillnets are the predominant gear type used within the Yukon River in Districts 1, 2 and 3.

Chinook salmon harvest quotas were eliminated for Districts 1 and 2 in 1960. From 1961 through 1980, the fishery was regulated by scheduled weekly fishing periods, and the season was opened by a published regulatory date. Commercial fishing time during the chinook salmon migration was 4 days a week during 1961 to 1967, but was reduced primarily to 3.5 days a week beginning in 1968, 3 days a week in 1974, and 2.5 days a week in 1977. Fishing periods of 24 hours duration generally occurred twice weekly from 1982 to 1986, and 12-hour periods were introduced during 1987 in Districts 1 and 2. Since 1989, commercial periods have been primarily 6, 9, or 12 hours in duration. Since 1981, a 60,000 to 120,000 chinook salmon guideline harvest range has been in effect for Districts 1 and 2 combined (Appendix A.14). In District 3, a guideline harvest range of 1,800 to 2,200 chinook salmon was established in 1979.

Sale of other species of salmon captured during the chinook salmon directed commercial fishery, excluding the 1920s, has been allowed since 1967. The incidental catch of summer chum salmon was limited during the chinook salmon directed commercial fishery in the late 1960s because fishermen could use only gillnets of eight-inch minimum stretched mesh. However, beginning in 1970, each fisherman could substitute up to 50 fathoms of gillnet of any mesh size in Districts 1 and 2. In 1973, all mesh size restrictions were lifted during the chinook salmon migration from June 1 through early July.

A regulation was adopted in 1973 specifying that gillnets of six inch mesh size or less could be fished after a specified date in early July in Districts 1 and 2. Prior to the 1976 fishing season, a

regulation was adopted which established a flexible range of dates of June 27 to July 5 in Districts 1 and 2, and July 5 to 15 in District 3, after which only gillnets of six inch maximum mesh size could be used. A regulation was adopted prior to the 1985 fishing season that eliminated specific dates and implemented emergency order authority for establishing restricted mesh size periods (six-inch maximum mesh size) in Districts 1, 2, and 3.

Allowable commercial fishing time for the fall season in the Lower Yukon Area has gradually been reduced since the 1970s. Throughout most of the 1970s, biweekly 24 and 36-hour commercial fishing periods were allowed. Throughout the early 1980s, biweekly 24-hour fishing periods were generally allowed. Beginning in 1983, a summer season closure of July 15 was established in the Lower Yukon Area to protect the early portion of the fall chum salmon run and to provide more time to evaluate the fall chum salmon run strength. Since 1990, commercial fishing periods have typically been 12 hours or less in duration in the Set Gillnet Only Area and six or nine hours in the remainder of the Lower Yukon Area. In the coastal area only set gillnets are allowed during commercial fishing periods. More commercial fishing time has been allowed in the coastal Set Gillnet Only Area due to the influence of tides on fishing efficiency.

Upper Yukon Area

Prior to 1974, the Yukon River drainage above the confluence of the Koyukuk River was designated as a single district (District 4). By regulation, commercial fishing was allowed 7 days per week until the quota of 2,000 chinook salmon had been harvested. The fishery was then reopened to allow the harvest of fall chum and coho salmon. When a combined quota of 2,000 fall chum and coho salmon were taken, the fishery was closed for the season. These quotas were established to allow a limited commercial activity in the Upper Yukon Area. Fish wheels and set gillnets are the legal permit types for commercial salmon fishing in the Upper Yukon Area. Although in the Anvik River, a set gillnet or a fish wheel commercial permit holder may use a set gillnet, fish wheel, hand beach seine or a hand purse seine during a commercial period. Fishermen may not transfer between districts in the Upper Yukon Area.

In recognition of the developing upriver commercial fishery and the desire for increased participation by fishermen, the BOF adopted several major regulation changes prior to the 1974 fishing season. District 4 was reduced in size, and two new districts, Districts 5 and 6, were defined. Additionally, the weekly commercial salmon fishing period was reduced from 7 to 5 days per week. Regulations also provided for increases in upriver commercial harvest quotas.

Since 1974, the BOF has enacted a number of major regulation changes in the Upper Yukon Area. Weekly fishing periods were reduced in all districts (except the upper portion of District 5) from 5 to 4 days per week, and split-period (two 48-hour periods) fishing schedules were established in 1980. Beginning in 1979, a combined quota for chinook, fall chum and coho salmon were replaced by a more flexible guideline harvest range, District 4 boundaries were redefined, and new subdistricts were created to allow for more stock-specific management of fall chum and coho salmon. New subdistricts within District 5 were created in 1981. Prior to 1993, the Upper Yukon Area had a fall chum and coho salmon combined guideline harvest range. In 1993, coho salmon were excluded from the guideline harvest range in the Upper Yukon Area. Since 1990, the duration of fishing periods has dramatically decreased, and fishing time has been based increasingly more on inseason run assessment.

In the spring of 1988, the BOF met in special session to take testimony on current and proposed salmon management practices on the Tanana River. This special session was a result of large-scale

illegal salmon and salmon roe sales documented in 1987 in portions of Districts 5 and 6. The BOF adopted regulations for District 6 which included: 1) reducing the commercial and subsistence fishing schedule from two 48-hour periods to two 42-hour periods per week, 2) specifying that there would be no more than one 42-hour commercial fishing period per week during the fall season, 3) requiring subsistence salmon fishing permits for the entire Tanana River drainage, and 4) establishing subsistence reporting requirements inseason for a portion of Subdistrict 6-B and all of Subdistrict 6-C.

The BOF further instructed ADF&G to manage District 6 on the basis of existing guideline harvest ranges, specifying that these guidelines could be exceeded only if it was determined that doing so would not jeopardize meeting subsistence and escapement requirements. Based on concerns for fall chum salmon spawning escapements in the Toklat River, the BOF in February 1990 reduced the commercial fishing time allowed for Subdistricts 6-A and 5-A to no more than one 24-hour period per week during the fall fishing season. These restrictions were lifted during the 1998 fishing season, but they will be reinstated for the 1999 and 2000 fishing seasons.

In most of the Upper Yukon Area, summer chum salmon flesh is difficult to market due to the high cost of transportation and the more advanced state of sexual maturity. However, the summer chum salmon roe quality is judged to be excellent by the industry. This has resulted in increased sales of summer chum salmon roe since 1980. Because of the large summer chum salmon roe fishery in Subdistrict 4-A and difficulty in estimating the associated harvest, the guideline harvest range for Subdistrict 4-A was established in February 1990 as 113,000 to 338,000 summer chum, or the equivalent of 61,000 to 183,000 pounds of roe, or some combination of fish and pounds of roe. In addition, regulations were adopted stipulating that no more than 183,000 pounds of summer chum salmon roe from Subdistrict 4-A harvests could be sold annually. Once the roe cap is reached, fishing effort could continue, but only the sale of chum salmon in the round would be allowed. Besides stating the pounds of roe sold, the BOF also required that all salmon caught by Commercial Fisheries Entry Commission (CFEC) permit holders during commercial fishing periods in Subdistrict 4-A be reported on fish tickets in numbers of fish.

In March 1994, the BOF adopted 5 AAC 05.368. Anvik River Chum Salmon Fishery Management Plan. Under this plan the Anvik River may be opened to summer chum salmon commercial fishing if a surplus greater than the escapement goal of 500,000 fish is available. The intent is to allow a harvest of Anvik River summer chum salmon that are in excess of the spawning escapement goal and to decrease the harvest pressure on non-Anvik River summer chum salmon stocks in the mainstem Yukon River near the Anvik River. All chinook salmon taken in the Anvik River during commercial fishing periods must be returned to the water alive.

During the November 1994 BOF meeting, the Anvik River Chum Salmon Fishery Management Plan was amended to allow use of the following gear types: hand beach and purse seines, fish wheels with live boxes, and a single set gillnet not to exceed 25 fathoms in length and not larger than 5-1/4 inch mesh. However, the gillnet must be continuously attended to release chinook salmon. Beginning in 1994, the lower 12 miles of the Anvik River were opened to commercial fishing (Figure 9). Hand beach seines have been the dominant gear type utilized and only summer chum salmon roe has been sold from the Anvik River fishery. A roe cap of 100,000 pounds of summer chum salmon roe was established by the BOF in March 1996.

Except for Subdistrict 4-A, carcasses resulting from roe extraction for commercial sales appear to be fully utilized for subsistence purposes. A portion of the carcasses resulting from the Subdistrict 4-A roe fishery is utilized for subsistence purposes (primarily for dog food). However, some wastage is suggested by the large difference between the estimated commercial summer chum salmon harvest

and the reported subsistence use in some years. Because only the roe of the fish is sold, ADF&G needs to estimate the number of salmon that was harvested to produce the roe sold. District 4 commercial related harvests of summer chum salmon were estimated from 1980 to 1988 based on the pounds of roe sold as indicated on fish tickets, estimated sex ratio, and an estimated average roe weight of one pound per female chum salmon. The one pound per female average roe weight was based on the subjective judgment of ADF&G.

In 1989, a comprehensive study was conducted in District 4 to collect more accurate average roe weight per female and sex ratio data to estimate the total commercial related summer chum harvest (Sandone 1991). The average roe weight per female for the 1989 season was calculated to be 0.9 pounds. A similar average roe weight per female was estimated in samples collected in 1988. Since 1989, ADF&G has sampled commercial catches from fish wheels and gillnets in upper river districts to estimate the mean proportion of females and to estimate average roe weights per female.

The primary type of gear for harvesting summer chum salmon in the Upper Yukon Area are fish wheels which account for roughly 95 percent of the commercial harvest for this species in the area.

Sport Fishery

In general, sport fish salmon harvests in the Yukon Area are relatively minor compared to commercial and subsistence harvests. The Tanana River drainage is the exception because it supports a popular salmon sport fishery. In 1988, the BOF established a guideline harvest range of 300 to 700 chinook salmon for the Salcha River recreational fishery. In 1990, the BOF established a guideline harvest range of 300 to 600 chinook salmon for the Chena River recreational fishery.

Canadian Harvests of Yukon River Salmon

Annual harvest data from the Canadian portion of the Yukon River drainage have been provided by DFO since 1962. The first recorded commercial salmon harvest in the Canadian portion of the Yukon River drainage occurred in 1903, when 70,000 pounds of chinook and fall chum salmon were taken (ADF&G 1985). Records indicate a Canadian commercial fishery occurred sporadically from 1903 to 1917 and continuously from 1918 to 1947 (Appendix A.3). No harvest records are available from 1948 to 1957. Harvest records document the annual salmon harvest by species since 1958 and also by user group since 1961.

The Canadian portion of the Yukon River drainage maintains Aboriginal, domestic, commercial, and sport fisheries for salmon. The Aboriginal and domestic fisheries are in some ways comparable to subsistence and personal use fisheries in Alaska, although the Aboriginal fishery is only open to native people. All of the commercial salmon harvest in Canada occurs on the mainstem Yukon River. Canadian salmon harvests in the Porcupine River drainage currently consist only of an Aboriginal fishery.

U.S./Canada Yukon River Salmon Panel and Treaty Negotiations

Negotiations were initiated in 1985 between the United States and Canada regarding a Yukon River salmon treaty. The purpose of these negotiations was to develop conservation and management

coordination between the U.S. and Canada for the salmon stocks that spawn in the Canadian portion of the Yukon River drainage.

In the mid-1990s, the realization was that, while reaching a comprehensive long term agreement remained a formidable challenge, there would be benefits by more formally implementing the areas of agreement to date. In February 1995, an interim Yukon River Salmon Agreement (Agreement) went into effect. A U.S./Canada Yukon River Panel (Panel) was formed to implement the Agreement. The Panel consisted of six United States members and six Canadian members. Both sides had to agree on an item before an action could be taken by the Panel. The U.S. side of the Panel consisted of four Alaskan Yukon River drainage fishermen, one Alaska State government official, and one U.S. federal government official. There was also an advisory group of Alaska Yukon River drainage fishermen providing input to the U.S. side. A Joint Technical Committee (JTC) provided technical support to the Panel. The focus of the Panel was on the salmon stocks that spawn in the Canadian portion of the Yukon River drainage. The Panel made recommendations to the management agencies in Alaska and Canada and administered the R&E Fund.

The Panel held its inaugural meeting in Whitehorse, Yukon Territory, in April 1996. A 6-year stabilization plan had been completed in 1995 for Canadian Yukon River mainstem chinook salmon. The objective of the 6-year stabilization plan was to prevent further declines in spawning escapement through achieving an escapement of at least 18,000 chinook salmon for each year through 1995. In April 1996, the Panel agreed to the first six years of a rebuilding plan for Canadian mainstem chinook salmon stocks. Recognizing the desirability of rebuilding stocks, the Panel agreed to an interim minimum spawning escapement objective for Canadian mainstem Yukon River of 28,000 chinook salmon for six years beginning in 1996. The U.S. contribution to this effort is to endeavor to deliver 44,800 to 47,800 chinook salmon to the Canadian mainstem Yukon River. The Canadian contribution to this effort is to endeavor to manage the harvest of chinook salmon in the mainstem Yukon River drainage in Canada by all user groups combined within a guideline harvest range of 16,800 to 19,800 chinook salmon.

For Canadian Yukon River mainstem fall chum salmon, a 12-year rebuilding plan was agreed upon during the negotiation process beginning with the 1990 season. The objective of this plan is to rebuild the stock by achieving a spawning escapement of more than 80,000 fall chum salmon for all brood years in the four-year cycle by the year 2001. The U.S. contribution to this effort is to endeavor to deliver to the Canadian border on the mainstem Yukon River an agreed to number of fall chum salmon which varies by year based upon the rebuilding schedule. The Canadian contribution to this effort is to endeavor to manage the harvest of fall chum salmon in the mainstem Yukon River drainage in Canada by all user groups combined within a guideline harvest range of 23,600 to 32,600 fall chum salmon.

A key component of the Agreement was administration of the R&E Fund by the Panel to address the restoration and enhancement of Canadian spawned salmon stocks. The U.S. contributes \$400,000 per year into the R&E Fund. At its April 1996, March 1997 and March 1998 meetings, the Panel allocated monies from this special fund to restore and increase salmon production on the river. Overall, approximately \$1.3 million in U.S. dollars has been granted to applicants of the fund. Applicants have included regional organizations, Native groups, private consultants and others, primarily in Canada.

Initially the Agreement was in place through 1997, with an option to extend if both sides agreed. Negotiations resumed in October 1997 to reach a long-term agreement on the remaining issues and

to incorporate the relevant elements of the Agreement. At the October negotiations, the Agreement was extended through March 31, 1998.

Although the U.S. side supported extending the Agreement, it expired at the March 1998 negotiations meeting. No other bilateral meetings were held through the remainder of 1998. During the 1998 fishing season, ADF&G continued to endeavor managing the salmon fisheries on the Yukon River consistent with the interim Agreement's rebuilding and conservation plans for chinook and fall chum salmon stocks.

Marine Harvests of Yukon River Origin Salmon

High Seas Salmon Gillnet Fisheries

Chinook salmon of western Alaska origin were intercepted annually by the Japanese mothership and landbased gillnet fisheries from 1964 through 1991 (Appendix A.24). Current estimates indicate an average of approximately 141,000 chinook salmon was taken during 1975-1983. Yukon River chinook salmon comprised the majority of western Alaska stocks taken in the Bering Sea mothership harvests. In 1980, a total of 438,000 western Alaska chinook salmon was estimated to have been taken in these fisheries, which exceeded the domestic commercial catch in western Alaska for that year.

Prior to 1988, the Japanese mothership salmon fishery operated in parts of the U.S. Exclusive Economic Zone (EEZ), waters from 3 to 200 miles off the U.S. coast. Beginning in 1988, the mothership fishery occurred outside of the EEZ. In 1990, the Japanese mothership fishery was converted to a "nontraditional land based salmon fishery" which ended in 1991. Estimates of the numbers of western Alaska chinook salmon in this harvest are not available.

Foreign, Joint-Venture, and U.S. Domestic Groundfish Fisheries

Information on incidental chinook salmon catches in offshore fisheries is presented in Appendix A.24. Foreign groundfish fisheries in the EEZ ended in the Gulf of Alaska in 1985 and in the Bering Sea in 1987. The joint-venture groundfish fishery ended in the Gulf of Alaska in 1988 and in the Bering Sea in 1990. U.S. domestic groundfish fisheries replaced these fisheries.

The numbers of salmon taken by the U.S./domestic groundfish fleet were estimated through 1989 due to lack of an observer program. The NMFS initiated an observer program beginning in 1990. In 1998, U.S. groundfish fisheries harvested approximately 58,966 chinook salmon in the Bering Sea and Aleutian Islands area and approximately 16,900 chinook salmon in the Gulf of Alaska (Appendix A.24). Generally, bycatch chinook salmon are one to two years away from maturity (D. Ackley, ADF&G, Juneau, personal communication 1998). Additionally, approximately 69,200 other salmon were taken in the Bering Sea and Aleutian Islands area. It is estimated that chum salmon accounted for 95 percent or more of the other salmon take. Management measures are taken to reduce salmon bycatch in the groundfish fishery.

Alaska Peninsula

The majority of chum salmon captured during June in the Unimak and Shumagin Islands area, located on the south side of the Alaska Peninsula, are bound for Bristol Bay, Asia, and the Arctic-Yukon-Kuskokwim (AYK) Region. The chum salmon stocks contributing to the harvest in this fishery have been described by several studies, including a tagging study in 1987. Beginning in 1993, a genetic stock identification study was conducted using samples from South Unimak and Shumagin Islands fishery. Results of this study indicate chum salmon stock contribution was similar to the 1987 tagging study. Sockeye salmon is the target species in the June commercial fishery, but incidental catches of chum salmon are also taken. The sockeye salmon harvest is regulated according to a quota that is adjusted annually and based on the Bristol Bay sockeye salmon forecast.

From 1993 to 1997, a harvest cap of 700,000 chum salmon during the June fishery was in effect. In addition, the board allowed ADF&G to open the fishing season and establish fishing periods based on sockeye to chum salmon ratios in an effort to reduce incidental chum salmon harvests. In January 1998, the BOF changed the fishery management plan for the June False Pass fishery. The most significant change lowered the chum salmon cap from 700,000 fish to a floating cap ranging from 350,000 to 650,000 chum salmon. The floating cap is dependent upon the previous year's harvest of summer chum salmon in AYK. The chum salmon cap for 1998 was 350,000 to 400,000 fish. A total of 1,288,000 sockeye and 246,000 chum salmon were taken in the June commercial fishery in 1998.

Norton Sound

A commercial harvest of 7,429 chinook salmon was taken in coastal Norton Sound waters in 1998. The chinook salmon commercial harvest was 9 percent below the recent 5-year average harvest. Some Yukon River bound chinook, chum and coho salmon are known to be intercepted by this fishery.

Salmon Spawning Escapement

An essential requirement for management of the Yukon River salmon fisheries is documentation of annual salmon spawning escapements. Such documentation provides for:

1. Determination of appropriate escapement levels or goals for selected spawning areas or management units;
2. Evaluation of escapement trends;
3. Evaluation of the effectiveness of the management program, which in turn forms the basis for proposing regulatory changes and management strategies; and
4. Evaluation of stock status for use in projecting subsequent returns.

Escapement Assessment Methods

The Yukon River drainage is too extensive for comprehensive escapement coverage of all salmon spawning systems. Consequently, low-level aerial surveys from single-engine, fixed-wing aircraft form an integral component of the escapement assessment program. Comprehensive assessment studies employing such techniques as intensified ground surveys, mark-recapture programs, counting towers, weirs, and hydroacoustics are also utilized. Regardless of the method, the overall objective of escapement assessment in the Yukon Area is to estimate abundance (or often indices of relative abundance), timing, and distribution of spawning salmon populations throughout the drainage.

There are both advantages and disadvantages related to each type of assessment method. The more comprehensive studies tend to provide estimates of total salmon abundance and are often less dependent upon weather and water conditions. However, these more sophisticated assessment projects are relatively expensive. While most of these more sophisticated projects are designed to monitor salmon escapements in select systems, four projects have been implemented to estimate salmon abundance at various locations in the mainstem Yukon or Tanana Rivers. These projects include a ADF&G sonar which is used to estimate total salmon passage by species through the lower Yukon River at river mile 123 near Pilot Station. Hydroacoustic techniques are used to estimate passage of fish, and a comprehensive drift gillnet sampling program is conducted to apportion sonar counts by species.

Another project designed to estimate salmon abundance by species in the Yukon River has been operated annually by DFO since 1982 (excluding 1984) near Dawson, Canada. That project consists of a comprehensive mark-recapture study to estimate the abundance of chinook and chum salmon entering the Canadian portion of the mainstem Yukon River. The two most recent large-river salmon monitoring projects also involve mark-recapture studies. The first of these has been conducted annually since 1995 in the upper Tanana River through cooperative agreement with the BSFA, and it has provided abundance estimates of fall chum salmon bound for the upper Tanana River drainage, upstream of the Kantishna River. The second consists of a cooperative, multi-year interagency, mark-recapture and radio-tracking study near Rampart to evaluate the distribution, abundance, and run characteristics of upper Yukon River fall chum salmon, with USFWS and NMFS as the lead agencies.

In contrast to the more comprehensive assessment projects, the greatest advantage of aerial surveys is the cost-effectiveness of obtaining escapement information throughout an extremely vast and remote area. Another advantage to aerial surveillance is that current or potential habitat-related problems arising from natural or man-induced causes can be identified. Among the disadvantages are that results may be highly variable if non-standardized procedures are used.

Variability in aerial survey accuracy is dependent upon a number of factors such as weather and water turbidity, timing of surveys with respect to peak spawning, aircraft type, and survey altitude, experience of both pilot and observer, and species of salmon being assessed. It is recognized that aerial estimates are lower than actual stream abundance due to these factors. Further, peak abundance measured by aerial survey methods is significantly lower than total spawning abundance due to the die-off of early spawners, and arrival of fish after the survey. Aerial estimates in a given stream may demonstrate a wide range in the proportion of fish being estimated from year to year. To the extent that this variability can be controlled, peak aerial counts may serve as indices of relative abundance for examination of annual trends in escapement.

Aerial escapement estimates are obtained from as many spawning streams as possible within the confines of fiscal, personnel, and weather constraints. However, selected spawning streams or "index

areas" which represent a larger geographic area have been identified and receive highest priority. Index areas have been designated due to their importance as spawning areas and/or by their geographic location with respect to other unsurveyable salmon spawning streams in the general area.

Escapement Goals

A biological escapement goal (BEG) has been established for several Yukon River drainage salmon spawning streams or areas (Appendix E.1). The underlying principle in setting the current BEGs was that maintenance of average or better spawning escapements should provide for sustained yield consistent with historic levels. Most of these goals represent the minimum number of desired spawners considered necessary to maintain the historical yield from the stocks and are based upon historical performance, i.e., they are predicated upon some measure of historic averages. Establishment of escapement goals based upon a rigorous analysis of maximum sustained yield is not possible at this time due to the nature of the Yukon River mixed stock fisheries, lack of stock identification data, and the inability to reconstruct total inriver stock-specific returns. Consequently, most escapement goals are based upon aerial survey index estimates, which do not represent total escapement but are assumed to reflect relative spawner abundance when using standard survey methods under acceptable survey conditions. However, the goals established for Anvik River summer chum salmon and selected fall chum salmon spawning stocks represent the desired minimum target for total spawning abundance; being based upon a more comprehensive escapement data base.

AREA SALMON REPORT 1998

Total Yukon River Drainage Salmon Harvest 1998

The total 1998 estimated harvest, excluding the sport fish harvest in Alaska (not available at the writing of this report), for the Yukon River drainage, including Canada, was 104,652 chinook, 117,905 summer chum, 70,773 fall chum, and 17,996 coho salmon (Table 2). The 1998 estimated total Yukon River drainage harvests compared to the recent 5-year averages (1993-1997) were as follows: chinook, 44 percent below (Appendix A.17), summer chum, 78 percent below (Appendix A.18), fall chum, 69 percent below (Appendix A.19), and coho salmon, 70 percent below average (Appendix A.20).

Alaskan Subsistence Fishery 1998

The number of salmon harvested in the 1998 Yukon Area subsistence fisheries was estimated from subsistence survey and fishing permit programs. Additionally, the numbers of fish given to the public for subsistence use from test fish projects throughout the drainage were also documented. Combining survey, permit, and test fishery information, an estimated total of 54,124 chinook, 87,366 summer chum, 62,901 fall chum, and 18,121 coho salmon were harvested by 1,425 subsistence fishing households in 1998 in the Yukon Area (Table 3). The 1998 estimated subsistence harvests compared to the recent five-year averages (1993-1997) were as follows: chinook was average (Appendix D.1),

summer chum, 34 percent below average (Appendix D.2), fall chum, 43 percent below average (Appendix D.3.), and coho salmon, 35 percent below average (Appendix D.4).

It must be noted however, that emergency orders restricting the fall season fishery resulted in reduced fishing opportunity in 1993 and 1994 which are included in the recent five-year average harvests. Additionally, the 1995 and 1996 fall fishery experienced a change in markets that resulted in an increase in the amount of roe being sold. Typically, fall chum salmon are sold in the round. In these years, the stripped salmon carcasses that became available as a result of the roe only market, were used to replace a portion of the normal subsistence harvest.

In 1998 the Yukon River drainage experienced disappointing returns of salmon which also exhibited late run timing. Although the overall subsistence harvest of chinook salmon was at average levels, Yukon River fishermen indicated they had to increase effort to meet their subsistence chinook salmon needs. However, the salmon harvests in the Coastal District were extremely low, which was attributed to abnormal off shore fish migration patterns. Additionally, the Koyukuk River drainage return of summer season salmon was poor in quantity and quality.

In managing the fall season subsistence fisheries, ADF&G follow guidelines provided by the BOF in the fall chum salmon management plan. By late August, ADF&G reviewed the available information and estimated the run would likely fall below 450,000 fall chum salmon. When the overall estimated run size is between 350,000 and 450,000 fall chum salmon, the management plan directs ADF&G to manage the subsistence fisheries to achieve a minimum drainage-wide escapement level of 350,000 fish. In most years, the subsistence harvest in the Yukon River drainage ranges between 100,000 and 200,000 fall chum salmon. Based on the 1998 inseason projected run size, implementing subsistence salmon fishing restrictions became necessary.

Effective August 27, ADF&G restricted the subsistence salmon fisheries throughout most of the Yukon River drainage, Districts 1 through 5, to a schedule of two 48-hour periods per week. Most areas were on a 7-days per week subsistence fishing schedule prior to imposition of these restrictions. Although, the tributaries of the Yukon River below the confluence of the Koyukuk River and within the Coastal District were not effected by these restrictions. In these areas, because of the low abundance of fall chum salmon, subsistence salmon fishing remained on a 7-days per week schedule. ADF&G also placed the entire 6-A and 6-B Subdistricts on two 42-hour subsistence salmon fishing periods per week. The majority of Subdistricts 6-A and 6-B was already on this schedule, but Old Minto area and Kantishna River drainage fishing periods were reduced to coincide with this schedule.

Typically, the vast majority of fall chum salmon enter the Yukon River by early September. Additionally, by early September, escapement and fishery monitoring projects within the upper Yukon River drainage begin to provide valuable inseason information on run strength and timing of fall chum salmon. These upriver indicators include the village of Tanana test fish wheels, Chandalar and Sheenjek River sonar projects, and the Rapids-Rampart and the upper Tanana River tagging projects. As ADF&G became more confident with inseason run size projections, it was apparent that further restrictions in the subsistence salmon fishery were needed in order to achieve a 350,000 drainage-wide fall chum salmon escapement level as directed by the management plan.

Effective September 4, in Districts 4 and 5 and Subdistricts 6-A and 6-B, ADF&G further restricted the subsistence salmon fisheries to 48 hours per week. In most areas, subsistence fishing was placed on a schedule of two 24-hour periods per week. Further restrictions to the subsistence salmon fishing schedule occurred in District 5 and Subdistricts 6-A and 6-B when

these areas were eventually placed on a one 24-hour period per week schedule. Subdistricts 5-B, 5-C and 5-D subsistence fishing was placed on the one 24-hour period per week schedule effective September 22. Subdistricts 5-A, 6-A and 6-B subsistence fishing was placed on this same, very restrictive fishing schedule effective September 28.

Subsistence salmon fishing restrictions, imposed to conserve fall chum salmon, were removed after the majority of fall chum salmon had migrated through traditional fishing areas bound for upriver spawning grounds. Lifting the subsistence fishing restriction provided for additional subsistence fishing opportunities on later running coho salmon as well as other non-salmon species such as whitefish. Subsistence salmon fishing restrictions were lifted on September 4 in Districts 1, 2 and 3. The last of the 1998 fishing restrictions that were imposed to improve fall chum salmon escapement were removed on October 5 in Subdistricts 5-A, 6-A and 6-B.

Compliance with these subsistence salmon fishing restrictions was very good. While imposing these restrictions, ADF&G worked extensively with users throughout the drainage. In addition to normal daily communications between ADF&G and individual fishermen, there were six Yukon River Drainage Fisheries Association (YRDFA) teleconferences during the fall season in 1998. The first fall season teleconference occurred on August 4 and the last on September 16. During these teleconferences, information was exchanged between fishermen throughout the drainage and with ADF&G. Fishing schedules were altered in some areas, in part, because of information fishermen provided during these teleconferences.

Survey Program

The majority of villages within the Yukon Area have no regulatory requirements to report their subsistence salmon harvest. To estimate the salmon harvest from these villages, ADF&G has implemented a voluntary survey program. The 1998 survey program utilized subsistence catch calendars, postseason household interviews, and postseason household telephone interviews and postcards to collect harvest information. Stratified random sampling techniques were used to select Yukon Area households to be interviewed during the 1998 postseason survey. Based on survey information collected in 1998, an estimated 1,231 households harvested an estimated total of 45,722 chinook, 76,603 summer chum, 44,031 fall chum, and 8,781 coho salmon in the survey portion of the Yukon Area (Table 3).

Subsistence Permit Program

A portion of the Yukon Area requires subsistence fishermen to obtain an annual household permit prior to fishing. In 1998 these areas include the majority of the Tanana River drainage, the Yukon River drainage between Hess Creek and the Dall River, referred to as the Yukon River Bridge area, and the upper portion of District 5 between the upstream mouth of Twenty-Two Mile Slough and the U.S./Canada border. In these areas, fishermen are required to document their subsistence harvest on the household permit and return them to ADF&G at the end of the fishing season. A total of 390 subsistence permits were issued in 1998 (Table 4). The number of subsistence fishing households and the reported subsistence harvest by household permits does not include Stevens Village. Because of its unique location, fishermen in Stevens Village harvested salmon in both the permitted and survey areas. The Stevens Village permit information was used to supplement the postseason survey of the village. A total of 194 subsistence permit holders indicated they fished in 1998. The reported harvest from permits totaled 6,924 chinook, 6,117 summer chum, 15,096 fall chum, and 7,617 coho salmon (Table 4). Historical subsistence permit harvest information for fisheries currently in regulation are summarized in Appendix D.5 and D.6.

Subsistence Salmon Use from Test Fisheries

The test fishery projects throughout the drainage provided a total of 1,478 chinook, 4,646 summer chum, 3,774 fall chum, and 1,723 coho salmon to households for subsistence use in 1998. Residents of the villages of Emmonak, Kotlik, Mountain Village, and Pilot Station and Tanana were the primary recipients of fish given away from the test fisheries. These salmon were assumed to replace fish that would have been obtained through normal fishing activities, therefore salmon given away by the test fisheries were added to those village subsistence harvests.

Subsistence Salmon Use from Commercial Fisheries

A regulation adopted by the BOF in February 1992 required fishermen to report on fish tickets the number of salmon caught but not sold during commercial fishing periods. Compliance with this regulation was very poor from 1992 to 1997. During the BOF meeting in December of 1997, the regulation was amended to remove the required reporting on fish tickets of salmon taken but not sold in all districts or subdistricts, with the exception of Subdistrict 6-C. No salmon were reported taken but not sold on fish tickets during the one commercial fishing period allowed in Subdistrict 6-C in 1998.

Disaster Relief

In 1998, the salmon returns to the Yukon Area were weak which resulted in many households not meeting their subsistence needs for both human consumption and dog food. To assist households which did not meet their subsistence needs, chum and pink salmon from other locations of the state were collected and transported by various organizations into the communities that needed them. The subsistence salmon harvest estimates within the Yukon Area are based on fish harvested from Yukon River stocks. For this reason the fish brought into the area from other regions of the state are not included in the subsistence harvest estimates of the Yukon Area, although they do play an important role in meeting the needs of the people.

In 1998, several relief efforts provided an estimated 11,359 chum salmon and 1,303 pink salmon for human consumption and 47,689 pink salmon for dog food (Table 5). The numbers of fish were estimated based on the pounds of fish delivered. Due to the effects of the unusual off shore salmon migration pattern observed in 1998, the available salmon abundance and the corresponding harvest by the Yukon Area coastal communities was significantly reduced. Disaster relief funds purchased, and provided for the processing, storage and the eventual distribution of chum salmon harvested in the Norton Sound fishery. An estimated 8,524 chum salmon were distributed in the communities of Hooper Bay, Scammon Bay, and Chevak for human consumption. Additionally, 2,835 chum salmon purchased from the Norton Sound fishery were distributed to the Koyukuk River communities, which were also drastically affected by poor returns of salmon. An estimated total of 1,303 pink salmon that included some cod bellies harvested from the Prince William Sound fisheries were supplied to the communities of Chevak and Pilot Station. These fish were also intended for human consumption. An estimated 47,689 pink salmon carcasses were supplied from a hatchery in Prince William Sound and distributed to Upper Yukon Area communities for use as dog food. Additionally, some owners of the larger dog kennels from Fairbanks and Manley Hot Springs made trips down to the Solomon Gulch Hatchery, at their own expense, to acquire an unknown amount of fish for dog food.

Alaskan Personal Use Fishery 1998

Fishermen are required to obtain an annual household permit for personal use fishing in portions of the Tanana River drainage within the Fairbanks Nonsubsistence Area (Appendix D.8). Fishermen are required to document their personal use harvest on the household permit and return them to ADFG at the end of the season. A total of 104 personal use permits were issued in 1998 (Table 4), and a total of 52 personal use permit holders indicated they fished in 1998. The reported harvest from permits totaled 357 chinook, 84 summer chum, 2 fall chum, and 9 coho salmon (Table 4). Historical personal use harvests for fisheries in regulation during the 1998 fishing season are presented in Appendix D.7. Additional information regarding the 1998 subsistence and personal use harvests in the Yukon Area can be found in Borba and Hamner (In Prep).

The 1998 personal use harvest of chinook salmon was average, while summer chum salmon was 89 percent below the five-year average (1990, 1993, and 1995-1997). Based on the poor abundance of summer chum and chinook salmon, the personal use fishery was closed after July 24, 1998 for the remainder of the summer season (until August 15). This closure was extended by emergency order into the fall season. Harvests of fall chum and coho salmon were practically nonexistent in the personal use fishery because the fishery remained closed from August 15 through October 15, 1998 essentially the entire fall season. The five-year averages (1990, 1993, and 1995-1997) of personal use fall chum and coho salmon was 604 and 417, respectively (Appendix D.7). This 5-year average includes 1993, a year in which fall season harvests were also affected by closures to the fishery. The recent 5-year average also includes 1997, a year in which the Tanana River fall chum salmon run was very weak.

Alaskan Commercial Fishery 1998

In 1998, commercial sales totaled 72,230 salmon and 413 pounds of unprocessed salmon roe from the Alaskan portion of the Yukon River drainage (Table 6). The catch was composed of 43,618 chinook, 28,611 summer chum, and one coho salmon. The roe sold included 260 pounds of chinook salmon roe and 153 pounds of summer chum salmon roe. A weak run of chinook and summer chum salmon limited the number of commercial openings in most districts during the summer season. In District 4, there were no commercial openings in 1998. The single coho salmon was sold in the Lower Yukon Area during the summer season. No fall season commercial fishery was allowed in 1998.

Poor returns of salmon to the Yukon River had a disastrous impact on the commercial fishery, resulting in limited fishing and buying effort and lower exvessel value. The low commercial harvest resulted in the majority of the Yukon Area being declared a disaster area. During the fishing season, numerous teleconferences with YRDFA were conducted to obtain input from user groups and to exchange salmon run status information.

The total estimated Alaskan commercial harvest, including the estimated harvest to produce roe sold, was 43,699 chinook, 28,798 summer chum, and 1 coho salmon (Table 6). The 1998 estimated salmon harvests compared to the recent 5-year averages (1993-1997) were as follows: chinook, 59 percent below average (Appendix A.4) and summer chum, 93 percent below average (Appendix A.5).

ADF&G test fishing projects sold a total of 878 chinook and 2,935 summer chum salmon in District 1 and 48 chinook and 84 summer chum salmon in District 2 in 1998 (Table 7). Test fish sales are not included in the commercial harvest.

The estimated value of the 1998 Yukon Area salmon fishery to the fishermen was approximately \$1.96 million, which was 65 percent below the recent 5-year average value of \$5.6 million (Appendix A.12). Salmon buyers and processors operating in the Yukon Area during 1998 are listed in Table 8. The majority of the salmon harvest was processed as a fresh or frozen product. Average prices paid to fishermen and average salmon weight are presented in Appendices A.11 and A.13, respectively.

In 1998, excluding transfers, a total of 776 CFEC gillnet permits and 162 fish wheel permits were issued (Table 9), with only 671 permit holders participating in the fishery (Table 10). This was 13 percent below the recent five-year-average of 772 permit holders and the lowest on record since 1972 (Appendix A.8 and A.9). Fishing effort was lower than normal because poor chinook and summer chum salmon runs resulted in reduced fishing times, and the poor fall chum salmon run resulted in no fall season commercial fishery. A total of 643 gillnet permit holders fished in the Lower Yukon Area in 1998, which was near the recent 5-year average. A total of 6 gillnet and 22 fish wheel permit holders fished in the Upper Yukon Area, which was 76 percent below the 5-year-average of 118 permits and the lowest since 1971. The number of commercial fishing permits (i.e. fishermen) that made at least one salmon delivery by district, by area, and by season is shown in Appendix A.9.

The preliminary estimated percentage of Canadian-spawned chinook salmon harvested in 1998 from all fisheries throughout the Yukon River drainage (Alaska plus Canada) was 50 percent (Appendix A.22). The estimates presented in Appendix A.22 are based on analyses of chinook salmon scale patterns, age composition ratios, and geographic distribution of harvests and escapements (Lingnau and Bromaghin 1999).

Fall chum and coho salmon age composition for fish harvested in the subsistence fishery cannot be estimated because no commercial fishing occurred and no subsistence harvest samples were collected. Historical fall chum and coho salmon age composition information is shown in Appendix A.21.

Lower Yukon Area Harvest

The 1998 Lower Yukon Area commercial salmon harvest totaled 42,219 chinook, 28,118 summer chum and 1 coho salmon (Table 10). The chinook salmon harvest was 58 percent below the recent five-year average (1993-1997), the summer chum harvest was 76 percent below the recent five-year average.

In 1998, a total of 704 CFEC gillnet permits were issued for the Lower Yukon Area (Table 9), of which 643 permit holders fished at least once. Lower Yukon fishermen were paid an average price per pound of \$2.51 for chinook, \$0.14 for summer chum salmon (Appendix A.11). The 1998 prices paid per pound for chinook and summer chum salmon showed an increase over recent years. The average price paid for chinook salmon in the Lower Yukon Area was the highest since 1993. The average price paid for summer chum salmon was the highest since 1995. The estimated exvessel value of the Lower Yukon Area commercial harvest was approximately \$1.9 million for chinook salmon and \$26,000 for summer chum salmon (Appendix A.12). The total Lower Yukon Area

exvessel value was 64 percent below the 1993-1997 average value. The average earnings per fisherman in the Lower Yukon Area was approximately \$3,042.

Six buyer-processors operated in the Lower Yukon Area in 1998 (Table 8). All of the commercial salmon harvest was shipped directly to fresh or fresh/frozen markets.

Upper Yukon Area Harvest

Upper Yukon Area commercial salmon sales in the round totaled 1,399 chinook and 493 summer chum salmon in 1998 (Table 10). Roe sales by species totaled 260 pounds for chinook and 153 pounds for summer chum salmon. The 1998 summer chum salmon roe sales was less than one percent of the 1993 through 1997 average of 162,000 pounds of summer chum salmon roe. Historical commercial harvest by statistical area is presented in Appendices C.4 -C.19.

The total estimated commercial salmon harvests reflect the estimated number of female salmon harvested to produce roe sold in Districts 5 and 6. Appendices C.2 and C.3 present commercial salmon sales and estimated harvest by gear type, set gillnet and fish wheel, respectively.

Three of four buyer-processors and seven of twelve catcher-sellers that registered in the Upper Yukon Area operated during 1998 season (Table 8). Upper Yukon commercial fishermen received an estimated average price per pound of \$0.91 for chinook salmon, \$2.00 for chinook salmon roe, \$0.18 for summer chum salmon, and \$1.90 for summer chum salmon roe (Appendix A.11). The estimated exvessel value of the 1998 Upper Yukon Area harvest was approximately \$18,000 (Appendix A.12). A total of 28 fishermen participated in the commercial fishery with average earnings at approximately \$648 each.

Chinook and Summer Chum Salmon Season

The 1998 preseason outlook was for a near average chinook salmon run and an average to above average summer chum salmon run. The commercial harvest in the Alaskan portion of the drainage was anticipated to be between 88,000 and 108,000 chinook and 200,000 to 600,000 summer chum salmon.

The lower Yukon River was generally free of ice by May 22 (Appendix A.23) and the first chinook salmon catches were reported on May 28 near Sheldon Point by a subsistence fisherman. ADF&G's test fishing projects recorded the first chinook salmon caught on June 1 (Appendix B.12).

Overall, the 1998 chinook salmon run was assessed to be later than average and weak in abundance. Approximately 50 percent of the chinook salmon run had entered the lower river by June 26, seven days later than average. The cumulative test fishing catch-per-unit-effort (CPUE) was 16.78 compared to the average of 25.01 for 1980 to 1997 (Appendix B.12). The preliminary Pilot Station sonar passage estimate of 122,000 chinook salmon was well below the passage estimates of 240,000 fish in 1995 and 224,000 fish in 1997 (Appendix E.3). Because of operational changes, Pilot Station sonar data in 1998 could only be compared directly with data collected in 1995 and 1997. Besides equipment upgrades, operational changes included a different aiming criteria used since 1995 to maximize the ability to detect passing fish. Since 1995 all detected fish are classified as upstream migrants. All run assessment tools indicated that lower numbers of chinook salmon entered the river than in previous years.

The 1998 chinook salmon run entered the river in short, weak pulses, but in a relatively steady pattern. Normal entry patterns consist of strong pulses of chinook salmon. The late timing of the chinook salmon run was also anomalous. Late run timing usually occurs only during years of late ice breakup. Another anomaly was the observations of chinook salmon in subsistence harvests along the North Slope of Alaska in 1998.

Age composition samples showed that, as had been expected for 1998, the chinook salmon run was composed of fewer 6-year olds than usual (Appendix A.21). However, the harvest abundance was below anticipated levels for all ages. Although age-5 fish comprised a large proportion of the chinook salmon commercial harvest, it was near normal in abundance, while all other age groups were below normal in harvest abundance.

The summer chum salmon run was assessed as being later than average and very weak in abundance. According to test fishing CPUE data, approximately 50 percent of the summer chum salmon run entered the lower river by June 27, five days later than average (Appendix B.12). The preliminary Pilot Station sonar passage estimate was 831,000 summer chum salmon (Appendix E.3). This is compared to the 1997 passage estimate of 1.4 million fish and the 1995 passage estimate of 3.6 million summer chum salmon. It is believed that approximately 1.0 million summer chum salmon are needed past Pilot Station to meet upriver spawning needs. However, several more seasons are needed to properly understand the relationship between Pilot Station sonar passage estimates and subsequent upriver harvests and spawning ground escapements. No directed summer chum salmon commercial fishing periods occurred in 1998 except for a 3-hour test period in District 1.

The summer season commercial harvest was very limited in 1998. The commercial harvest of chinook and summer chum salmon was below the low end of the guideline harvest range for all districts, except in District 6. The harvest in District 6 slightly exceeded the upper end of the chinook salmon guideline harvest range. No commercial harvest occurred in District 3, and no commercial fishing periods were allowed in District 4. Fishing time was reduced to roughly two-third of the normal in the three lower river districts and by roughly one-half in Districts 5 and 6. The nine Lower Yukon Area fishing periods were spread out more than usual in the Lower Yukon Area, and only one period was allowed in each of Districts 5 and 6. A summary of emergency orders issued during the chinook and summer chum salmon fishing season is provided in Appendix A.25.

Districts 1, 2 and 3

Preseason, the anticipated Lower Yukon Area (Districts 1, 2, and 3) commercial harvest was 82,000 to 100,000 chinook salmon. However, the harvest from fishing periods targeting chinook salmon with unrestricted mesh size gillnets was not expected to exceed 85,000 fish. One management concern is the quality of the escapement, i.e., the number of female salmon in the escapements. Large mesh size gillnets, utilized during unrestricted mesh size openings, target older, larger chinook salmon. These include a larger proportion of females than do smaller mesh gillnets used during restricted mesh size fishing periods. Fishing periods restricted to six-inch or smaller mesh-size gillnets result in higher catches of smaller, predominantly male, chinook salmon. Therefore, the amount of harvest taken with large mesh gear must be carefully considered.

The normal management strategy is to open the chinook salmon directed commercial fishery in the Lower Yukon Area when increasing subsistence and/or test net catches of chinook salmon have occurred over a 7- to 10-day period. The 1998 commercial fishing season opened on June 15 in District 1 (Table 11) after approximately seven days of increasing subsistence and test fishery catches.

Because of the extremely low salmon harvest reported during the first opening and because test fishing chinook salmon catches indicated well below average abundance, no additional periods were established until June 23. The indications of low abundance were completely unexpected, particularly in view of the relative historic stability of the chinook salmon run. It was extremely challenging to accurately assess chinook salmon run strength and allowable harvest because of a strong possibility of late run timing. Additionally, managers did not have any other comparable year of low abundance by which to gauge the 1998 salmon run. Based on low test fish CPUE, a strategy of increasing the duration between commercial fishing periods and reducing commercial fishing time from the more typical 12-hour periods was employed. From June 23 through July 3, four 9-hour unrestricted mesh size gillnet periods were allowed in Districts 1 and 2. The cumulative harvest reached approximately 36,000 chinook salmon on July 3, well below any other year since 1961. The last fishing period was reduced to six hours in both Districts 1 and 2 based upon the likely dominance of lower river chinook salmon stocks and the near average escapement at the East Fork Andreafsky River weir.

The combined total harvest of 42,219 chinook salmon in Districts 1 and 2 was 30 percent below the low end of the guideline harvest range of 60,000 fish and 58 percent below the 1993 to 1997 5-year average harvest of 100,135 fish (Appendix A.17). A total of 41,008 chinook salmon was harvested during unrestricted mesh size fishing periods and 1,211 chinook salmon were harvested during one fishing period restricted to six inch maximum mesh size gillnets. The overall average weight of 18.0 pounds in the commercial harvest was lower than the previous record low of 19.6 pounds (which occurred in 1988 and 1990), and well below the 5-year average (1993 to 1997) of 20.8 pounds (Appendix A.13). The average weight of chinook salmon was 18.1 pounds for the unrestricted mesh size harvest and 14.7 pounds for the six inch maximum mesh size harvest.

Six-inch maximum mesh-size fishing periods are utilized to target summer chum salmon in the Lower Yukon Area. One 3-hour test commercial fishing period with six-inch maximum mesh-size was allowed in District 1 on July 2 (Table 11). The combined commercial summer chum salmon harvest in District 1 and 2 of 28,118 fish and was 76 percent below the recent 5-year-average harvest of 115,133 fish (Appendix A.18). A total of 20,314 summer chum salmon were caught during unrestricted mesh size fishing periods and 7,804 summer chum salmon were harvested during one 3-hour restricted mesh size test opening. The average weight of summer chum salmon was 6.7 pounds.

Preliminary age composition data from the Lower Yukon Area indicated 6-year-old fish accounted for approximately 31 percent of the chinook salmon samples from the commercial harvest. This was consistent with the below average return of 5-year-old fish in 1997. Age-4 and age-5 chinook salmon accounted for 5 percent and 55 percent of the commercial harvest samples, respectively. Approximately 43 percent of the chinook salmon commercial harvest in Districts 1 and 2 were females. Five-year-olds comprised approximately 35 percent of the summer chum salmon samples taken from the lower river commercial harvest.

District 3 was open for one commercial fishing period in 1998, but no deliveries were made. Although commercial fishermen initially expressed an interest in fishing in District 3, they all chose to fish in either Districts 1 or 2.

District 4 and Anvik River Management Area

District 4 was not opened to commercial fishing in 1998, primarily due to the weak summer chum salmon run. Subsistence drift gillnet fishing for chinook salmon in Subdistrict 4-A was extended by

emergency order from its regulatory closing date of July 14 to July 21. Subdistricts 4-B and 4-C were allowed uninterrupted subsistence fishing by emergency order beginning June 16.

Commercial fishing was also not allowed within the Anvik River Management Area (Figure 9) in 1998. The minimum escapement goal of 500,000 summer chum salmon was not met in the Anvik River. Commercial fishing for summer chum salmon has been permitted in the lower 12 miles of the Anvik River (Statistical Area 334-47) from 1994 through 1997 (Appendix C.9).

District 5

In District 5, chinook salmon is the primary species of commercial value during the early season. Summer chum salmon do not contribute substantially to the commercial harvest because of the timing of the fishery, poorer flesh quality, and the higher transportation costs to market.

Only one 18-hour commercial fishing period was allowed in Subdistricts 5-A, 5-B, and 5-C, which opened on July 23 (Table 11) after the chinook salmon run was believed to be well distributed throughout these subdistricts. The harvest of 475 chinook salmon was 81 percent below the lower end of the guideline harvest range of 2,400 fish. A total of 96 summer chum salmon in the round and 13 pounds of roe were sold for a total estimated harvest of 110 summer chum salmon.

Commercial fishing in Subdistrict 5-D was opened for one 24-hour period beginning July 26, 1998. The Subdistrict 5-D harvest of 42 chinook salmon was 86 percent below the low end of the guideline harvest range of 300 chinook salmon.

District 6

Commercial fishing in District 6 was only opened for one 24-hour period beginning July 17, 1998 (Table 11). The District 6 estimated commercial harvest was 963 chinook and 570 summer chum salmon. The chinook salmon harvest exceeded the upper end of the guideline harvest range of 800 fish. The summer chum salmon harvest was 96 percent below the low end of the guideline harvest range of 13,000 fish. Management of the fishery was primarily based on Chena and Salcha River escapement estimates obtained from counting towers. The single District 6 commercial fishing period was directed towards harvesting chinook salmon. Based on commercial harvest and escapement data, both the chinook and summer chum salmon runs to the Tanana River drainage were below average.

Fall Chum and Coho Salmon Season

Yukon River drainage fall chum salmon return primarily as age-4 followed by age-5 fish. Age-3 and age-6 fish also contribute to the run, but to a much lesser extent. A Ricker spawner-recruit model was used to project the returns of fall chum salmon from the 1992 to 1995 parent-years that would contribute to the 1998 run. This process resulted in a 1998 preseason projection of approximately 880,000 fall chum salmon.

In managing the fall season commercial fisheries, ADF&G follow guidelines provided by the BOF in the fall chum salmon management plan. The BOF reviewed 5 AAC 01.249. Yukon River Drainage Fall Chum Salmon Management Plan during a meeting held in Fairbanks in December 1997. During this meeting, the BOF received public, organization, and advisory committee

comments concerning the fall chum salmon management plan. Comments included proposed amendments submitted by YRDFA. After deliberation, the BOF adopted a management plan, containing the recommendations proposed by YRDFA. The plan will be in effect through the year 2000 fishing season. The plan is dependent on ADF&G's ability to accurately assess the run size entering the river and take appropriate management actions.

This management plan recommends that directed fall chum salmon commercial fishing be allowed only when the total inriver run size is projected to be greater than 675,000 fish. Additionally, only the harvestable surplus above 625,000 fall chum salmon can be targeted in the Alaska commercial fisheries. The 1998 preseason projection of approximately 880,000 fall chum salmon suggested a commercial harvest of up to 255,000 fall chum salmon, given normal stock distribution. If the fall chum salmon return returned as projected, a commercial harvest approaching the third quartile of each district's guideline harvest range could be expected.

As the 1998 run materialized, ADF&G used inseason management tools to adjust the run size projection and the corresponding allowable harvest. Lower Yukon River monitoring tools available to ADF&G in 1998 included the lower Yukon River set gillnet test fishery, the Mountain Village drift gillnet test fishery, Pilot Station sonar passage estimates, subsistence catch reports, and age composition data. This information, in combination with the preseason projection, was the basis for initial management decisions in the lower Yukon River fisheries.

By early August, it was estimated that the 1998 fall chum salmon return would be significantly below the preseason projection, and likely less than 600,000 fish. The management plan directs that for an overall run assessment below 600,000 fall chum salmon, ADF&G shall close the commercial, sport, and personal use fisheries. Thus, no commercial salmon fishing occurred during the fall season in 1998. Effective August 15, chum salmon catch and release restrictions were placed on sport fisheries throughout the entire Yukon River drainage. This restriction remained in effect for the duration of the fishing season. Also, effective August 15, the Subdistrict 6-C personal use salmon fishery near Fairbanks was closed and remained closed for the duration of the fishing season. The sport and personal use fishing restrictions were imposed prior to fall chum salmon becoming available in these fisheries. Essentially, because of these actions, no fall chum salmon were harvested in the commercial, sport, or personal use fisheries in 1998.

Yukon River coho salmon have a slightly later, but overlapping, run timing with that of the fall chum salmon run, which complicates the fall season management program. However, fall chum salmon are the primary species of management concern during the fall season. There are no commercial guideline harvest ranges established for coho salmon. In 1998, the commercial harvest of coho salmon was a function of the timing, frequency, and duration of periods established for the more numerous fall chum salmon. In 1998 there were no fall chum salmon directed commercial fishing periods. Consequently, no coho salmon were sold during the fall season in 1998. However, it is noted here that one coho salmon was sold in District 2 during the summer season.

Canadian Fisheries 1998

Much of this summary of the fisheries in the Canadian portion of the Yukon River drainage was obtained from material provided by DFO (JTC 1998).

A total of 5,937 chinook, 7,904 fall chum, and 214 coho salmon were estimated to have been harvested by Aboriginal, domestic, sport, and commercial fisheries in the Canadian portion of the Yukon River drainage in 1998 (Table 2). This included 737 chinook salmon harvested in a special Aboriginal test fishery. The combined harvest in the Canadian mainstem Yukon River fisheries included 5,838 chinook and 1,745 fall chum salmon. The harvest at Old Crow in the Porcupine River drainage was 99 chinook, 6,159 fall chum, and 214 coho salmon.

Commercial Fishery

The Canadian Yukon River commercial fishery harvested a total of 390 chinook salmon and no chum or coho salmon in 1998 (Table 2). This was the lowest commercial catch on record, dating back to 1904, and was the result of extensive closures in the fishery due to conservation concerns for both chinook and chum salmon stocks. The chinook harvest was 96 percent below the recent five-year-average (1993-1997) catch of 9,800 fish. This was the first year the commercial fishery was closed during the entire chum salmon season due to conservation concerns.

A total of 21 commercial licenses were issued in 1998, six less than in 1997. Most of the reduction can be attributed to a license buy-back program conducted by DFO and the Yukon Salmon Committee² (YSC). A total of five licenses were purchased in the buy-back. The purpose of the program was to accommodate obligations arising from the Comprehensive Land Claim Umbrella Final Agreement (UFA) which will see increased participation by First Nation fishermen in the commercial fishery.

Chinook Salmon

The first chinook salmon was caught in the DFO fish wheels on June 27 and catches remained sporadic through the second week of July. According to the Canadian management plan, the Canadian commercial fishery should have opened on July 27, which was the fifth day after the run was thought to have begun. However, on July 3 DFO fish wheel catches were approximately 80 percent below average, and there were also assessments available from Alaska that the run entering the mouth of the Yukon River had been far below expectations. Based on this information, a decision was made by DFO to postpone the first opening of the commercial fishery until after a special meeting of the YSC was convened on July 6 to review the situation.

During the July 6 meeting, the YSC and DFO agreed that a limited assessment fishery was justified given the following: it was still very early in the season in the Canadian section of the drainage; there was some uncertainty over run indicators in the lower Yukon River; and, there was a need to obtain assessment data within the Canadian section of the river upon which to base further decisions. Based on the information at hand, the YSC recommended restricting the initial opening of the commercial fishery to 24 hours and delaying the start until July 12. A second restricted opening of 24 to 48 hours the subsequent week would follow this opening. The YSC would meet again after the second opening to review the information. It was anticipated the tags

² Management of salmon in the Yukon Territory is a shared responsibility between Fisheries and Oceans Canada (DFO) and the Yukon Salmon Committee (YSC). The YSC was established in 1995 pursuant to the Comprehensive Land Claim Umbrella Final Agreement (UFA) between the Government of Canada, the Council of Yukon Indians, and the Government of the Yukon.

recovered in the commercial fishery would provide the basis for inseason forecasts of border escapement that might be available by that time.

The first opening in the commercial fishery was on July 12 to 13. A total of 12 fishermen participated in the fishery and caught a total of 173 chinook salmon, 2 of which were tagged. The CPUE was 14 chinook salmon per fishermen per day, 62 percent below the recent cycle average for this week of 37 chinook salmon per fishermen per day. Below average CPUE was anticipated particularly if the run timing was late.

The second opening in the commercial fishery was scheduled to commence on July 19. This opening lasted 36 hours and the fishery closed on July 20. A total of 11 fishermen participated in the opening catching a total of 212 chinook salmon; 10 of these fish were tagged. The catch compared poorly with previous 6-year average (1992 to 1997) daily catches for this week of 675 chinook salmon per day. The CPUE for this opening was 13 chinook salmon per fishermen per day compared to an average of 47 chinook salmon per fishermen per day. The poor performance of the commercial fishery was also reflected in the DFO fish wheel catches which were 58 percent below average on July 21 and the second lowest on record.

A conference call was held between DFO and YSC on July 22 to update the catch and stock assessment from information throughout the Yukon River drainage. The below average catches in the Canadian commercial fishery and in DFO fish wheels were reviewed, along with the first inseason forecasts of the number of chinook salmon expected to pass into the Canadian mainstem Yukon River. The border escapement forecasts on July 22 ranged from 32,000 to 43,000 chinook salmon. However, there was not a high degree of confidence in the estimates due to the low catches and tag recoveries upon which the estimates were based. The wide range in the forecasts was the result of two estimates being developed. The higher estimate was derived from commercial and aboriginal catch and tag recovery data from the Dawson area, whereas the lower estimate was derived by adding in data supplied from the Chandindu River weir, which started operating in 1998 and was funded by the Yukon R&E Fund. It was felt that the lower estimate was more robust since it included a higher recapture sample, even though the ratio of tags in the weir sample was much higher than recorded in the fishery catches.

Based on the poor run strength of the chinook salmon return that was evident from both the catches and stock assessments to date, the YSC recommended that effective midnight July 25, the commercial, domestic and sport fisheries for chinook salmon be closed until further notice. Run forecasts would be reviewed weekly and if they indicated the escapement and aboriginal fishery requirements would be achieved, consideration would be given to rescinding the closures.

Recognizing the closure of the commercial fishery would seriously impact the mark-recapture program and the ability to update run estimates, the DFO and YSC developed a test fishery program in conjunction with the Tr'on dek Hwetch'in First Nation in Dawson City and Dawson area commercial fishermen. The program involved the First Nation hiring up to five, two- person teams fishing with gillnets in prime commercial fishing areas two days each week. The fish that were caught went to the Tr'on dek Hwetch'in First Nation in Dawson and from there, they were distributed to other First Nations that were in need of fish.

A total of 737 chinook salmon were caught in the test fishery, which occurred generally from noon Monday through noon Wednesday each week for three consecutive weeks commencing July 27. Run forecasts were updated weekly as the new data became available and results were discussed with the YSC. The forecasts declined as the season progressed from: 22,500 to 27,700 chinook forecast on July 30; to 21,100 to 25,500 chinook forecast on August 6; to 20,600 to

24,300 chinook forecast on August 13. As a result of the poor run forecasts, the commercial, domestic and sport fisheries remained closed through the remainder of the season.

The total commercial chinook salmon catch of 390 fish was the lowest recorded since 1904 and was approximately 4 percent of the preseason expectation which was for a commercial catch of 10,000 chinook salmon. Samples collected from the commercial and Aboriginal test fishery indicated an unweighted sex composition of 39 percent females. This compares with unweighted sex compositions obtained from commercial harvests of 38 percent and 48 percent females in 1996 and 1997, respectively.

Fall Chum Salmon

By mid-August it was apparent from the lower Yukon River run indicators that, similar to the chinook salmon run, the abundance of fall chum salmon was well below average and far below expectations.

Through August 31, the DFO fish wheels caught 33 chum salmon, the lowest catch on record and 94 percent below the previous 10-year average of 583 chum salmon. The poor run size indicators by both the lower river projects and at the DFO fish wheels prompted DFO to continue the commercial, domestic and sport fishery closures that were in effect since July 25. The YSC reconvened on September 10 to review the status of the fall chum salmon run. With the DFO fish wheel catch through September 9 having climbed to only 84 fall chum salmon, compared to an average of 1,290 fish, and only marginal increases in the run size indicators in Alaska, YSC recommended continuing the closures until further notice. This meant that the mark-recapture program conducted by DFO to provide inseason estimates of run status would be without its primary mode of tag recovery, the commercial fishery. Funding constraints prevented re-establishing the test fishery and forced the examination of alternative methods for assessing the run size.

In the absence of mark recovery data, DFO used the historical relationship between the DFO fish wheel catch and the border passage estimates to estimate the 1998 fall chum salmon border passage. On September 9, the border passage forecasts ranged from 31,000 to 47,000 fall chum salmon, well below the number required for spawning escapement.

The YSC met again on September 17. At that time the Pilot Station sonar count in the lower Yukon River was completed; the estimate was approximately 397,000 fall chum salmon compared to an average of 722,000 fish. DFO fish wheel catches through September 16 was 89 percent below average and the border passage forecasts ranged from approximately 35,000 to 49,000 fall chum salmon. Information from the Fishing Branch River weir also indicated poor run abundance with the count being 97 percent below average. In light of the continued poor run outlooks, YSC recommended continuation of the fishery closures.

A review on September 28 indicated some improvement in DFO fish wheel catches, but the cumulative catch was still 83 percent below average. Forecasts based on DFO fish wheel catch regressions projected a run into Canada of 46,000 to 58,000 chum salmon, well below the spawning escapement goal. The Fishing Branch River weir count had increased somewhat, but remained 80 percent below average. Run size indicators in the middle and upper Yukon drainage sections in Alaska ranged from 54 percent to 90 percent below average.

The YSC continued to meet weekly for the first half of October during which time the conservation concerns for chum salmon continued. The final review conducted on October 15 indicated a border passage of 47,000 to 51,000 chum salmon. The DFO fish wheel catches through October 7, when the wheels were pulled, were the lowest on record and were 74 percent below average.

This was the first year the Canadian commercial fishery was closed during the entire fall chum salmon season due to conservation concerns. Combined with the extremely restricted chinook salmon fishery, this marked the worst commercial season on record.

Canadian Aboriginal, Domestic and Sport Fisheries

The third year of a multi-year comprehensive survey of the Aboriginal fishery was conducted in 1998 as part of the implementation of the UFA. The project entitled: *The Yukon River Drainage Basin Harvest Study*, is conducted by LGL Ltd. Environmental Research Associates, and primarily involves intensive inseason surveys of harvest and effort in the fishery throughout the upper Yukon River drainage in Canada, excluding the Porcupine drainage.

The preliminary estimate of the 1998 chinook salmon harvest in the Aboriginal fishery was 4,687 fish (standard deviation of 213), 38 percent below the 1992 to 1997 average of 7,550 chinook salmon. The total fishing effort during the chinook salmon season was 29,996 net-hours, 6 percent higher than in 1997. However, not all First Nations expended more fishing effort in 1998. For example, conservation concerns of the Teslin First Nation and the Ta'an First Nation (Whitehorse area) lead to a drop in fishing time by 60 percent and 68 percent, respectively. In addition, 737 chinook salmon were harvested in an Aboriginal test fishery initiated in 1998 as part of a tag recovery program. In the Old Crow Aboriginal fishery, 99 chinook salmon were harvested, which was well below the recent 5-year average of 449 fish.

The preliminary estimate of the 1998 harvest of chum salmon in the Aboriginal fishery is 1,745 fish compared to the recent average of 2,224 fall chum salmon. The final fall chum salmon catch estimate for 1997 was estimated to be 1,218 fish. Compared to 1997, the overall effort for the chum salmon season was up by 22 percent in 1998. In the Old Crow fishery, 6,159 chum salmon were harvested in the Porcupine River near Old Crow, which was above the recent five-year average.

Coho salmon catches in Canada are generally limited to the Porcupine River where they are taken in the Old Crow fishery in late October and November. In 1998, 214 coho salmon were harvested, which is below the previous 4-year cycle average of 295 coho salmon.

Conservation concerns and extensive fishery closures contributed to reduced catch levels in the 1998 domestic fishery with only one of eight fishermen reporting catches. The fishery was closed for the season on July 25. The preliminary total harvest of 24 chinook salmon was well below the previous average of 270 chinook salmon. Chum salmon have not been recorded in the domestic fishery catch since 1989.

On July 25, the sport fishery for Yukon River chinook salmon was closed for the season. This essentially closed the fishery before chinook salmon reached the popular fishing areas such as the Yukon River near Tatchun Creek.

Escapement 1998

The 1998 program to monitor salmon spawning escapements in the Yukon River drainage was similar to that implemented in 1997. This was made possible by fiscal and personnel assistance from several other agencies and organizations. Comprehensive escapement assessment projects funded and operated by ADF&G in 1998 included monitoring chum salmon escapements to the Anvik and Sheenjek Rivers using hydroacoustic techniques. Replicate ground surveys and stream life data were used to estimate abundance of chum salmon spawners in the Toklat and Delta Rivers, and counting platforms were used by the Division of Sport Fish to monitor timing and abundance of both chinook and chum spawners in the Chena and Salcha Rivers. Division of Sport Fish also operated a counting tower on the Chatanika River to monitor summer chum and chinook salmon escapement and conducted a boat survey of the Delta Clearwater River (DCR) during the peak of coho salmon spawning. ADF&G operated the Yukon River sonar project at Pilot Station to provide daily estimates of salmon passage by species (Appendix E.3), and it conducted a fourth-year, mark-recapture study in the upper Tanana River through cooperative agreement with BSFA. The major objective of the study was to estimate the abundance of fall chum salmon in the Tanana River upstream of the confluence of the Kantishna River.

Projects funded and operated by USFWS to monitor salmon escapement in 1998 included weir operations on the East Fork Andreafsky and Gisasa Rivers and a hydroacoustic project on the Chandalar River. While the East Fork Andreafsky weir was operated to monitor summer chum and chinook salmon escapements, duration of the project was extended for a fourth year with assistance from BSFA, to provide information on timing and abundance of coho salmon. The Gisasa River weir provided comprehensive escapement information on summer chum and chinook salmon, while the 1998 Chandalar River operation consisted of using split-beam sonar to monitor fall chum salmon escapements to that river.

Additional escapement assessment projects in the Alaskan portion of the Yukon River drainage, either jointly or entirely funded and operated by other organizations in 1998, included counting tower operations on the Nulato River, Kaltag and Clear Creeks and a weir operation on Beaver Creek. The Nulato River tower project was cooperatively operated by ADF&G and the Nulato Tribal Council (NTC), with funding provided by BSFA. BSFA, in cooperation with TCC and BLM, also operated a counting tower on Clear Creek, a tributary of the Hogatza River in the Koyukuk River drainage. The Alaska Cooperative Extension 4-H program operated the Kaltag Creek project with partial funding from BSFA.

Projects conducted by the Canadian DFO in 1998 included a mark-recapture project near Dawson to estimate the total number of mainstem Yukon River chinook and chum salmon passing the U.S./Canada border into Yukon Territory. The Yukon River R&E Fund funded several escapement projects. Site specific studies included manning an enumeration window and passage gate at Whitehorse to monitor chinook salmon escapement upstream of Whitehorse. Additionally, the R&E Fund was used to install weirs in Wolf Creek (to determine the portion of chinook salmon passing the Whitehorse fishway bound for that stream), Blind Creek (Ross River), Tatchun Creek, and Chandindu River. Additionally, DFO operated a weir on the Fishing Branch River to count fall chum salmon.

In addition to the above projects, the third year of a cooperative multi-year, interagency chum salmon mark-recapture and radio-tracking study near Rampart to evaluate the distribution, abundance, and run characteristics of upper Yukon River fall chum salmon was conducted, with USFWS and NMFS as the lead agencies.

Remaining escapement information throughout the Yukon River drainage in 1998 was obtained primarily by aerial surveillance, although ground surveys were also conducted. This included aerial and ground surveys funded by BSFA and conducted by TCC in portions of the Nenana River drainage to increase knowledge about chum and coho salmon escapements to that area.

Overall, conditions for conducting aerial surveys throughout much of Interior Alaska during the chinook and summer chum salmon season were considered marginal because of cloudy and rainy conditions prevailing in much of the drainage. In the Canadian portion of the drainage, DFO was successful in surveying most major chinook salmon index streams in Yukon Territory. Aerial and ground surveys of fall chum and coho salmon spawning streams in the Alaskan portion of the drainage were confined to the Tanana River drainage in 1998, DFO flew surveys of most fall chum salmon index streams in Yukon Territory.

Escapement estimates obtained in 1998 are shown in Appendix E.2 while Appendix E.10 through E.14 show major Yukon River tributary systems.

Chinook Salmon

Chinook salmon spawning stocks are widely distributed throughout the Yukon River drainage. Appendices E.4 and E.5 present historic chinook salmon escapement data for selected streams during the period 1961-1998. Chinook salmon escapement goals established by ADF&G for eight Alaskan streams, or index areas, are: East (>1,500) and West Fork (>1,400) Andreafsky, Anvik (>1,300 entire drainage or >500 Yellow River to McDonald Creek), North (>800) and South Fork (>500) Nulato, Gisasa (>600), Chena (>1,700), and Salcha (>2,500) Rivers. These escapement goals are based upon aerial survey index counts and do not represent total escapement. It should be understood that caution must be used when comparing aerial survey results between years because of the variability inherent to this methodology. In addition, there is a rebuilding step escapement goal of 28,000 chinook salmon for the Canadian mainstem Yukon River.³

Escapement data from selected tributaries indicate that spawning escapement goals for lower river stocks (includes Yukon River drainage below the upper Koyukuk River) have generally been achieved from 1993 through 1997, except for 1996. With the exception of the Chena River in 1994, escapement goals for middle river stocks (primarily Tanana River drainage) have been achieved from 1993 through 1997. Chinook salmon harvests are apportioned to region of origin using a combination of scale pattern analysis, age class composition similarity and geographic location of the harvest. Stock identification studies indicate that approximately 52 percent of the Alaskan chinook salmon harvest is spawned in Canada. Efforts to increase escapements to the Canadian mainstem Yukon River have resulted in larger spawning escapements, averaging 29,700 fish from 1992 through 1997.

³ Although no escapement goals have been established for individual Canadian streams, an interim escapement goal of 33,000 to 43,000 chinook salmon spawners for the mainstem upper Yukon River drainage (Yukon Territory) was established by the JTC in March 1987. However, a minimum rebuilding step escapement goal of 28,000 chinook salmon was established by the Yukon River Panel in April 1996. This goal, established for the period 1996 to 2001, replaced the 1990 to 1995 stabilization goal of >18,000 chinook salmon. Although the Panel ceased to exist in March 1998, the rebuilding step escapement goal was maintained for the 1998 season.

Yukon River chinook salmon abundance in 1998 was assessed as weak, based on commercial harvest data and escapement estimates from selected tributaries (Appendix E.4 and E.5). Total chinook salmon run abundance was estimated to be approximately 176,000 fish based on run reconstruction using Pilot Station sonar passage estimates and estimated harvest and escapement down river of the sonar. This was well below the total run reconstruction estimates for 1995 and 1997 of 363,000 and 341,000 chinook salmon, respectively. Chinook salmon escapements in 1998 were below the recent 4- or 5-year averages throughout the drainage, with minimum escapement goals achieved in only three surveyed tributaries. The return of 5-year-old chinook salmon was less than expected given the large return of 4-year-olds in 1997. In addition, production from the 1992 parent year (age-6 fish) appears to have been poor given the escapement levels documented that year.

Chinook salmon escapement to the Andreafsky River appeared to be near escapement goal levels. An aerial survey count of 1,249 chinook salmon in the West Fork Andreafsky under poor survey conditions was 11 percent below the minimum escapement goal of 1,400 salmon. The East Fork Andreafsky River aerial survey count of 1,027 chinook salmon was 32 percent below the minimum escapement goal of 1,500 salmon. The USFWS weir count of 4,011 chinook salmon for the East Fork Andreafsky River was 19 percent below the recent 4-year average weir count of 4,946. The estimated age composition was 17 percent age-4, 71 percent age-5, and 11 percent age-6 fish. The quality of the escapement was poor as males predominated the escapement samples at 71 percent of the total.

An aerial survey of the Anvik River on July 23, conducted under poor conditions, resulted in a count of 648 chinook salmon within the escapement index area, which exceeded the minimum goal of 500 salmon by 30 percent. Age and sex composition samples were collected in 1998 by carcass survey. Five-year-old chinook salmon dominated these samples, comprising 60 percent of the total, with age-4 and age-6 fish (15 percent and 24 percent) comprising most of the remainder. Males were more numerous than females, accounting for 67 percent of the samples collected.

Minimum aerial survey index escapement goals are 800 chinook salmon for the North Fork and 500 for the South Fork Nulato River. Aerial surveys with fair ratings resulted in counts of 546 and 507 chinook salmon in the South Fork and North Fork (including mainstem below the forks), respectively. An estimate of chinook salmon escapement was provided from a salmon counting-tower project operated by the NTC, BSFA and ADF&G. The tower count of 1,536 chinook salmon was 30 percent below the recent 4-year average of 2,182 chinook salmon. However, mid-channel water clarity problems in the Nulato River vary within and between years, making it difficult to compare chinook escapements between years.

On July 31 an aerial survey was conducted on the Gisasa River, a tributary to the Koyukuk River. A total of 889 chinook salmon were observed on this survey under poor conditions. The minimum escapement goal is 600 chinook salmon. The USFWS counted 2,356 chinook salmon migrating through the Gisasa River weir, which was approximately 25 percent below the recent 4-year average of 3,157. The estimated age composition was 17 percent age-4, 61 percent age-5, 19 percent age-6, and 3 percent age-7 fish. The quality of the escapement was very poor as males predominated the escapement samples at 84 percent of the total.

Although no chinook salmon escapement goals have been established for other streams in the Koyukuk River, aerial surveys were flown on selected Koyukuk River tributaries. Aerial surveys flown under poor conditions observed 31 chinook salmon in the South Fork Koyukuk River on August 1 (Appendix E.2) and 70 chinook salmon in the Kateel River on July 31. Aerial surveys flown under fair conditions observed 45 chinook salmon in the Jim River and 97 chinook salmon

in Henshaw Creek on August 1. A weir was not operated by the USFWS on the South Fork of the Koyukuk River in 1998 due to flood conditions.

Since 1993, inseason assessment of chinook salmon escapement to the Tanana River drainage has been based on counts of chinook salmon passing the Chena and Salcha River tower sites operated by ADF&G, Division of Sport Fish. Mark-recapture escapement population estimates are available for both streams from 1987 through 1992. High, turbid water hampered operations on the Chena and Salcha Rivers several times during the 1998 season. The tower passage estimate for the Chena River was 4,745 chinook salmon, which was the lowest escapement since 1991. The tower estimate for Salcha River was 5,027 chinook salmon, which was the lowest escapement since 1989. The minimum aerial survey escapement goals for the Chena River and Salcha River index areas are 1,700 and 2,500 salmon, respectively. High water resulted in poor aerial survey conditions on both rivers, although multiple attempts were made from July 16 through August 10. The highest count was 386 chinook salmon for the Chena River index area. The highest count of 1,923 chinook salmon for the Salcha River index area occurred on August 4 and was 23 percent below the minimum escapement goal. Age and sex composition samples were collected in 1998 from carcass surveys on both rivers. The age composition estimated from the carcass samples was 5 percent age-4, 72 percent age-5, and 17 percent age-6 fish. Males were more numerous than females, accounting for 61 percent of the samples. Five-year-old chinook salmon dominated escapement samples in the Salcha River, accounting for 74 percent of the total. Males comprised 62 percent of the fish sampled.

Observations on chinook spawning escapements in other tributaries of the Tanana River drainage were made in the Chatanika and Goodpaster Rivers. Division of Sport Fish in 1998 operated a counting tower on the Chatanika River. The escapement estimate was 864 chinook salmon for the period of July 6 through July 31. A mark-recapture study conducted by Division of Sport Fish in the Chatanika River in 1997 resulted in an escapement estimate of 3,809 chinook salmon. No escapement goal exists for this stream, however aerial surveys have been conducted intermittently in past years. An aerial survey flown August 2 on the Goodpaster River with a survey rating of fair observed 591 chinook salmon.

In 1998, the BLM was not able to operate a weir on Beaver Creek due to flood conditions.

The preliminary DFO mark-recapture population estimate of 22,588 chinook salmon entering the Canadian portion of the mainstem Yukon in 1998. Subtracting the estimated Canadian commercial and non-commercial harvest (excluding Old Crow) of 5,838 fish from this population estimate results in a preliminary spawning escapement estimate to the Canadian mainstem Yukon River of 16,750 chinook salmon (Appendix E.5). This is 44 percent below the 1992-1997 average of 29,697 chinook salmon and well below the rebuilding step goal of 28,000 fish. In addition to poor run abundance, there was also concern about very low water levels that persisted throughout the chinook salmon season; most of the non-glacial watersheds were very low as a result of minimal precipitation. There were also reports of higher than normal water temperatures in some locations.

Aerial surveys were conducted by DFO of Yukon Territory chinook salmon spawning index areas on the Little Salmon River, Big Salmon River, Wolf River, Nisutlin River, and Tincup Creek, once per index in 1998 (Appendix E.2 and E.5). The Ross River index was not flown in 1998 due to budgetary and time constraints. Surveys with ratings other than poor are considered useful for inter-annual comparisons. However, it is likely low water conditions in 1998 improved visibility, contributing to high countability compared to most other years.

The Little Salmon aerial survey was flown on August 19. Countability was rated as good. A total of 361 chinook salmon were observed. This count is 53 percent below the recent 5-year average (1993 to 1997). The Big Salmon River, Nisutlin River, and Wolf River indices were flown on August 21. As in 1997, excellent viewing conditions were encountered due to favorable water levels and clear, calm weather. Consequently, countability on the Big Salmon River and the Wolf River surveys were rated as excellent, while that encountered on the Nisutlin River survey was rated as good. A total of 523 chinook salmon were enumerated on the Big Salmon River index, 65 percent below the recent 5-year average. The Nisutlin River index count of 146 chinook salmon was 64 percent below average. On the Wolf River index, only 66 chinook salmon were observed, which was 82 percent below average. The final chinook aerial survey conducted by DFO took place on August 22 on Tincup Creek. The visibility during this survey was excellent for the entire index area. Fifty-three chinook salmon were observed, which was 62 percent below average.

Timing of the aerial surveys appeared close to peak spawning, perhaps a couple of days early for indices other than the Little Salmon River. The contribution of dead fish to total counts ranged from 88 percent below the recent cycle average (on the Nisutlin River) to 9 percent below the recent cycle average (on the Wolf River). Many unoccupied redds were observed. However, the vast majority of them are believed to be associated with previous years' spawners.

The Whitehorse Rapids Fishway chinook salmon count of 777 fish, provided by the Yukon Fish and Game Association, was 59 percent below the recent 5-year average. The sex ratio observed at the fishway was 21 percent female, which was below the recent average of 39 percent female. Adipose-clipped fish accounted for 58 percent of the count, and numbered 433 males and 21 females. The adipose-clipped counts were expanded by the marked to unmarked release ratios using the age composition of adipose-clipped fish (sexes treated separately) observed in 1996. Preliminary calculations indicated a hatchery run contribution of 95 percent. There were at least 150 mortalities in the fishway, constituting a 24 percent mortality rate for females and 18 percent mortality rate for males. The 1998 and 1997 seasons have seen what are believed to be record numbers of mortalities in the fishway. However, the 1998 mortality rate was higher. The reason for the high mortality rates observed this year and last year has not been determined with certainty, however, many fish appeared to be reluctant or unable to move past the upper end of the fishway. It is possible that there has been some impediment to fish movement in the fishway itself, or that the fish simply lacked the energy to ascend the upper end of the fishway, which has a significant gradient. There were some anecdotal reports in 1998 that the overall fitness of Yukon River chinook salmon appeared poor, perhaps as a result of unfavorable marine conditions.

As has been observed each year since 1994, a number of chinook ascended the fishway more than once. In 1998, these fish comprised less than 1 percent of the run. Coded-wire tag data from 1994 through 1997 indicate that the fish exhibiting this behavior had been released into the fishway as fry, after rearing in the hatchery. The fishway was first used as a release site for adipose-clipped hatchery fry in 1989; hence, it is possible that the number of adipose-clipped fish may be exaggerated somewhat in annual counts beginning in 1991, when the first 3-year-olds would have returned. Adjustments have not been made to adipose-clip tallies for 1991 to 1994. Starting in 1995, all adipose-clipped chinook salmon ascending the fishway were marked with a caudal punch in order to eliminate the possibility of multiple-counting.

The total number of chinook salmon spawned for hatchery brood stock in 1998 was 71 females and 104 males. An estimated 362,402 green eggs were taken between August 23 and September 7, 1998. The average fecundity for the females taken for brood stock was 5,100 eggs.

The Yukon Fish and Game Association also operated weirs on Wolf Creek and Michie Creek, both of which are upstream of the Whitehorse Fishway. The Wolf Creek weir provided a count of only 7 chinook salmon, 2 of which were female. A total of 131 chinook salmon were counted through the Michie Creek weir. The sex composition was only 21 percent female. Passage of chinook salmon through both these weirs, but particularly the Wolf Creek weir, appeared to be delayed, perhaps due to low water conditions.

The Blind Creek weir project, conducted by the Ross River Dena Council, provided a count of 373 chinook salmon between July 19 and August 19, 1998. Of the 220 fish sexed, 94 (43 percent) were identified as females. The Blind Creek weir count in 1998 was approximately 61 percent below the count obtained in 1997 of 957 chinook salmon.

For the second consecutive year, Quixote Consulting installed a weir on Tatchun Creek. Enumeration commenced on July 15 and terminated on September 5. A total of 405 chinook salmon were observed, 29 percent of which were identified as female. The total count was 66 percent below that obtained in 1997. At Tatchun Creek, the fish appeared to hold in the mainstem Yukon River for a significant period before ascending the creek. This delay is believed to have been caused by the extremely low water conditions observed at the mouth of Tatchun Creek in 1998.

Weirs were installed on two additional upper Yukon River tributaries for the first time in 1998. The Yukon Commercial Fishermen Association installed a weir on the Chandindu River, also known as the Twelvemile River, located downstream of Dawson City. Installation of the weir was originally scheduled for mid-June, but was delayed by flood conditions. A total of 132 chinook salmon were enumerated between July 4 and August 25, only 13 percent of which were female. Two Whitehorse residents installed a weir on MacIntyre Creek, a small tributary of the Yukon River downstream of Whitehorse. Only 8 chinook salmon were counted through this weir.

Additional aerial or ground surveys for chinook salmon adult enumeration were conducted on streams which have not been subject to long term, consistent monitoring. These surveys were conducted by Yukon First Nations through the DFO Aboriginal Fisheries Strategy or by consulting firms or private individuals funded by the R&E Fund. Streams surveyed included the Morley River, Gladys River, Mica Creek, Needle Rock Creek, Sidney Creek, Jennings River, upper Teslin River, and Nordenskiold River. The Morley River survey, flown on August 27, 1998, resulted in a count of 49 fish. This was 78 percent below the number observed on a survey conducted on the Morley River on August 23, 1997.

Summer Chum Salmon

Summer chum salmon spawn primarily in tributaries from the mouth of the Yukon River to the Tanana River drainage. Appendix E.6 presents historic summer chum salmon escapement data for selected streams during the period 1973-1998. Escapement goals have been established for the following streams: East (>109,000) and West Fork (>116,000) Andreafsky (>500,000), Anvik (>500,000), North Fork Nulato (>53,000), Hogatza (Clear Creek at >8,000 and Caribou Creek at >9,000) and Salcha (>3,500) Rivers. With the exception of the Anvik River escapement goal, which is a total assessment based on sonar, all other escapement goals are based upon aerial survey indices of abundance during periods of peak spawning.

From 1991 through 1997, escapements in the Anvik River, the largest single producer of summer chum salmon in the Yukon River drainage, were above the escapement goal (Appendix E.6).

However, spawning escapements to other Yukon River tributaries during this same period of time, based on limited aerial survey information, appeared to have been below desired levels in 1993. In general, escapement objectives appear to have been met in the majority of the drainage from 1994 through 1996. However, severe flooding in August 1994, particularly in the Koyukuk River drainage, and the lack of snowfall during the winter of 1995-1996 may affect production from the 1994 and 1995 parent years.

Postseason analysis of comparative commercial harvest and escapement data indicates the summer chum salmon run was very weak in 1998. Total summer chum salmon run abundance was estimated to be approximately 979,000 fish based on run reconstruction using Pilot Station sonar passage estimates and estimated harvest and escapement down river of the sonar. This was well below the total run reconstruction estimates for 1995 and 1997 of 4,090,000 and 1,593,000 summer chum salmon, respectively. Spawning escapements to selected tributaries were below most other years for each project (Appendix E.2 and E.6). No escapements in monitored tributaries met minimum goals or were considered adequate; results ranged from 27 percent to 81 percent below recent five-year averages. Aerial surveys were hampered by poor weather conditions in most of the drainage.

The Anvik River sonar-estimated escapement of 471,865 summer chum salmon was approximately 6 percent below the minimum escapement goal of 500,000 and the sixth lowest since 1979. The run was lower than expected based on parent year escapements of 517,409 and 1,124,689 summer chum salmon in 1993 and 1994, respectively. Four-year-old fish comprised 80 percent of escapement samples, and females accounted for 60 percent of the samples.

Weir projects were operated by USFWS on the East Fork Andreafsky and Gisasa Rivers. A total of 67,591 summer chum salmon were counted passing the East Fork Andreafsky River weir. This count was 49 percent below the recent 4-year-average of 133,180 fish. Aerial surveys were not conducted on the Andreafsky River for summer chum salmon in 1998 due to poor survey conditions. The weir count indicated the minimum escapement goal for the East Fork Andreafsky River was not met. The age composition of escapement samples was 83 percent age-4, 15 percent age-5, and 2 percent age-6 fish. Females made up 57 percent of the total number sampled.

A total of 18,228 summer chum salmon were estimated to have passed through the Gisasa River weir. A summer chum salmon escapement goal has not been established for this river. However, the 1998 weir count was 43 percent below the 1997 weir count and the lowest on record since the project's inception in 1994. The age composition of escapement samples was 55 percent age-4, 37 percent age-5, and 7 percent age-6 fish. Females made up 51 percent of the total number sampled.

The estimated summer chum salmon escapement into Kaltag Creek in 1998 of 8,113 fish was 85 percent below the recent 4-year-average escapement of 55,546 fish. While no escapement goal has been established for Kaltag Creek, this escapement level was considered poor.

The estimated summer chum salmon escapement into the Nulato River (both forks combined) was 49,140 salmon, which was 71 percent below the recent 4-year-average of 168,330 fish. Based on this tower count, the aerial escapement goal of 53,000 summer chum salmon was not met. An aerial survey of the Nulato River was not conducted in 1998 due to poor weather conditions. The age composition of escapement samples was 67 percent age-4, 32 percent age-5, and 1 percent age-6 fish. Females made up 63 percent of the total number sampled.

This was the fourth consecutive year the Clear Creek tower on the Hogatza River was operated. No summer chum salmon were counted passing through the site prior to July 2. High water prevented counting operations on July 2. Partial counts obtained on July 9 and 13 totaled 212 summer chum salmon. The recent 3-year average is 98,034 summer chum salmon for the entire season. The aerial escapement goal is a minimum of 8,000 summer chum salmon. An aerial survey flown on July 31 with a poor rating observed 120 summer chum salmon in Clear Creek.

Aerial surveys were flown on selected Koyukuk River tributaries and the Melojitna River. Aerial surveys flown with a survey rating of fair resulted in a count of 395 summer chum salmon in the Melojitna River on July 22, 642 and 595 summer chum salmon in the Dakli River and Wheeler Creek, respectively, on July 31, 24 summer chum salmon in the Jim River, and 151 summer chum salmon in Henshaw Creek on August 1.

High, turbid water occasionally hampered tower counting operations on the Chena and Salcha Rivers during the 1998 season. The 1998 Chena River tower count was 5,901 summer chum salmon, which was 37 percent below the 1993, 1994, 1996, and 1997 average count of 9,410 fish. The final Salcha River tower estimate of 17,289 summer chum salmon was 54 percent below the recent 5-year (1993 to 1997) average of 37,324 fish. Aerial surveys of both rivers were conducted either too early (prior to peak spawning) or under poor weather conditions. An aerial survey of the Salcha River flown on August 4 under poor survey conditions estimated 370 summer chum salmon within the index area. Summer chum salmon age and sex composition samples were not collected in 1998 from carcass surveys on either river due to high water conditions.

In addition to the Chena and Salcha River projects, Division of Sport Fish also operated a counting tower on the Chatanika River in 1998. The final estimate was 663 summer chum salmon for the period of July 7 through July 31.

Fall Chum Salmon

Major fall chum salmon spawning areas are located in the Chandalar River, Tanana and Porcupine River drainages and within the Canadian portion of the mainstem Yukon River drainage. Appendix E.7 presents historic fall chum salmon escapement data for selected streams since the early 1970s. The most complete database on Yukon River fall chum salmon escapements dates back to the early 1970s and exists for four streams: Delta, Toklat, Sheenjek, and Fishing Branch Rivers. Minimum escapement goals of total spawning abundance to these streams are 11,000, 33,000, 64,000, and 50,000 fall chum salmon, respectively. Additionally, annual estimates of border passage and subsequent spawning escapement also exist for Canadian fall chum stocks in the upper mainstem Yukon River. The minimum spawning escapement goal for those stocks is 80,000 fall chum salmon.⁴

The 1998 Yukon River fall chum salmon run was approximately 10 days later than average (among the latest on record), and well below the preseason projected return of 880,000 fish. Total run size includes the Pilot Station sonar passage estimate and the harvest below the sonar site. The estimated number of fall chum salmon passing Pilot Station was 397,000 fish for the period July 19 through September 9. The corresponding total run size was the third lowest on record and

⁴ The U.S. and Canada negotiated a twelve year rebuilding plan, beginning in 1990 and ending after the 2001 season, for Canadian Yukon River mainstem fall chum salmon. The objective of the plan is to rebuild the stock by achieving a spawning escapement of 80,000 or more fall chum salmon for all (four) brood years by the year 2001.

only 45 percent of the preseason projection. Spawning escapements were below average throughout the entire drainage.

Assessment of escapement to the Porcupine River drainage was based upon observations made in the Sheenjek and Fishing Branch Rivers. Although sonar operations were suspended in the Sheenjek River for six to seven days due to prevailing high water conditions early in the season, total escapement was estimated to have approximated 33,000 fall chum salmon for the 45-day period August 17 through September 30. This is likely the poorest escapement observed to this river since inception of sonar counting operations in 1981, and is 49 percent below the Sheenjek River minimum escapement goal of 64,000 fall chum salmon. Similarly, the escapement goal for the Fishing Branch River was not achieved in 1998. Only 11,912 chum salmon were enumerated through the DFO weir during the 42-day period of August 26 through October 8, the lowest on record and 76 percent below the minimum escapement goal of 50,000 fish.

In the Chandalar River, the sonar-estimated escapement made by USFWS was 75,800 chum salmon for the 48-day period from 8 August through 25 September, well below the 1995-1997 average of 228,000.

The preliminary fall chum salmon mark-recapture abundance estimate made by USFWS for fish passing the tagging site at "Rampart-Rapids", was 187,923 chum salmon for the period August 3 through September 19. This abundance estimate is approximately 52 percent lower than the 1997 estimate (393,000) and 72 percent lower than the 1996 estimate (660,000). By comparison, the sum of escapements to the Chandalar, Sheenjek and Fishing Branch Rivers, together with the mainstem Yukon River border passage estimate in 1998 was 58 percent and 75 percent lower than what was estimated to those areas in 1997 and 1996, respectively. The 1998 estimate of spawning escapement for Canadian Yukon River mainstem fall chum salmon was only 46,300 fish.

Tanana River fall chum salmon escapement in 1998 was evaluated to be extremely weak for the second consecutive year. The population estimate for the Toklat River, based upon expanded ground surveys of Toklat Springs, was 15,605 fall chum salmon. This is nearly 53 percent below the minimum escapement goal of 33,000 fish. For the upper Tanana River (upstream of the Kantishna River), the mark-recapture abundance estimate through October 5 was $62,400 \pm 23,700$ (95% C.I.) fall chum salmon, the lowest abundance estimate obtained in the four years the tagging study has operated. It was approximately 13 percent below the 1997 estimate (72,000 fish), 54 percent lower than the 1996 estimate (135,000 fish), and 77 percent lower than the 1995 estimate (268,000 chum salmon). Ten ground surveys were conducted in the spawning areas of the Delta River during the period of September 29 through December 2, 1998. The highest count was obtained on November 5 when 5,703 fall chum salmon were counted. A total spawner abundance estimate of 7,804 chum salmon was obtained using the area-under-the-curve method. This was 29 percent below the minimum escapement goal of 11,000 fall chum salmon for the Delta River. Although no escapement goals exist for other fall chum salmon spawning areas in the upper Tanana River drainage, a peak ground count of 2,110 fall chum salmon was obtained on November 5 by USGS personnel in Bluff Cabin Slough (Big Delta region). This is 66 percent below the 1988 through 1997 average of 5,666 fall chum salmon.

A coded wire tag recovery project for Toklat River fall chum salmon originating from and released into the Susanna River in the Toklat Springs area, after incubation at Clear Hatchery, was continued for the third year in 1998. Because a relatively low number of tagged fish were recovered in 1998, it was difficult to estimate survival and contribution rates. A final report summarizing results of that study will be completed in the future. A preliminary assessment of the

low numbers of coded wired tags (CWT) recoveries in 1998 may indicate that poor ocean or early marine survival was the cause of the poor fall chum salmon returns and not fresh water survival.

Coho Salmon

Coho salmon spawning escapement assessment is very limited in the Yukon River drainage due to funding limitations and often marginal survey conditions that prevail during the period of peak spawning. Presently, only one escapement goal has been established for coho salmon in the Yukon River drainage. The Delta Clearwater River (DCR) in the Tanana River drainage has a minimum goal of 9,000 coho salmon based upon a boat survey during peak spawning. While most coho salmon escapement information is from the Tanana River drainage (Appendix E.9), cooperative efforts of USFWS and BSFA allowed the East Fork Andreafsky River summer season weir operation to be extended into September for the fourth consecutive year in 1998. This provided additional information on the timing and abundance of coho salmon to a tributary in the lower Yukon River. A total of 5,417 coho salmon passed through the weir on September 13, the last day of operations in 1998. However, no fish passage estimates were possible for 11 days during the period August 17-28 due to high water conditions. The 1998 estimate compares to a 1995-1997 average passage of approximately 9,500 for the same approximate time period.

In 1998, the Division of Sport Fish conducted a boat survey of the DCR index area on October 20 and estimated 11,100 coho salmon present, 23 percent above the minimum escapement goal. An additional 2,775 coho salmon were estimated present in tributaries of the DCR by aerial survey on October 21. An estimated 2,775 coho salmon were observed to be present in the outlet stream of Clearwater Lake from an aerial survey flown October 20.

Remaining escapement information on coho salmon in 1998 was obtained primarily by aerial surveys flown in portions of the Tanana River drainage, although limited ground surveys were also conducted at a few locations. A large part of this work was conducted by TCC, particularly in the Nenana River drainage. Estimated numbers of coho salmon spawners in the Nenana River drainage included 1,360 fish in Lost Slough, 1,413 fish in Seventeen Mile Slough, 2,771 fish in the mainstem Nenana River upstream of the Teklanika River, and 370 fish in the Clear-Glacier-Wood Creek complex of the Julius Creek drainage. In the Toklat River drainage, a mid-October ground survey of Geiger Creek documented only 157 coho salmon.

Enforcement 1998

The primary enforcement authority for violations of Fish and Game regulations is the FWP within the Department of Public Safety. For purposes of enforcing subsistence, personal use, and commercial fishing regulations within the Yukon Area, FWP typically has employees permanently stationed in Bethel, McGrath, Aniak, Galena, Coldfoot, and Fairbanks. Additionally, during the fishing season, officers are stationed at other locations along the Yukon and Tanana Rivers.

Lower Yukon Area

FWP conducted patrols in the Lower Yukon Area during June 1998 utilizing two floatplanes and one skiff. In general, compliance with fishing regulations was good. Eight citations were issued for various violations such as unmarked gear and lack of crewmember licenses. In addition, there were three citations involving failure to transfer a CFEC permit correctly.

Upper Yukon Area

Aircraft and boat patrols from Fairbanks were conducted in the Upper Yukon Area during the summer and fall seasons. Because the FWP officer was transferred out of Galena prior to the fishing season, no officers were stationed in Galena during the 1998 fishing season. Compliance during the limited summer season commercial and subsistence periods throughout both the summer and fall seasons was good, with few complaints and no problems noted. Due to the numerous subsistence restrictions brought about by poor fall chum salmon returns, there was some confusion associated with changes in fishing times altered by emergency orders and their conveyance to the people affected by the orders. Warnings for fishing during a closed subsistence period were issued near Eagle. In addition to the warnings, several citations were issued during the year; one for unmarked subsistence gear near Eagle, and three near Fort Yukon for subsistence fishing during a closed period. In addition, one unmarked subsistence gillnet was seized near Fort Yukon for fishing during a closed period.

Outlook For 1999

Chinook Salmon

Typically the majority of chinook salmon returning to the Yukon River are age-6 fish, though age-5 and age-7 fish usually make up a significant contribution to the run. Spawning ground escapements in 1993, the brood year producing age-6 fish returning in 1999, were judged to be above average in magnitude. However, the return of age-5 fish in 1998 appeared to be near average in strength. The age-7 return is expected to be weak based on the unusually low contribution of age-5 and age-6 fish from the 1992 parent year that returned in 1997 and 1998. The return of age-5 fish in 1999 is expected to be average to below average. Although parent year escapements in 1994 were judged to be average to above average in magnitude, the return of age-4 fish in 1998 appeared to be weak, and many of the age-5 and age-6 fish showed physical signs of stress. Assuming poor production, the 1999 chinook salmon run is anticipated to be weak to below average in strength. The commercial harvest in Alaska is expected to be 25,000 to 75,000 chinook salmon (23,000 to 69,000 fish in the Lower Yukon Area and 2,000 to 6,000 fish in the Upper Yukon Area). This represents a range of catch well below all other years except for two recorded during the previous 30 years.

Summer Chum Salmon

Based on above average escapements in 1994 and 1995, an above average return of age-4 and age-5 summer chum salmon would normally be expected. However, similar to many salmon stocks in the Bering Sea region, recent productivity of Yukon River summer chum salmon has declined. Specifically, production of Anvik River summer chum salmon, which represents the largest spawning stock in the Yukon River, has fallen to well below one return per spawner for the 1993 and 1994 brood years. Causes for the observed drop in productivity are still unknown, as are the duration and exact magnitude of the current downward trend. In addition, an unusually small number of age-3 fish from the 1995 brood year were detected in spawning tributary samples collected in 1998. It is possible that the extreme winter of 1995-96, characterized by very little snow covers, may also have adversely effected the survival of age-4 fish returning in 1999. Overall, the 1999 outlook is for a below average summer chum salmon run. The commercial harvest is expected to be 25,000 to 300,000 fish, given the uncertainties associated with recent declines in productivity and market conditions.

Fall Chum Salmon

Drainage-wide, Yukon River fall chum salmon escapements for the period 1974 through 1992 have been estimated to range from approximately 110,000 (1982) to 1,200,000 (1975), based upon an expansion of escapement for selected stocks to approximate overall escapement abundance. Escapements in these years resulted in subsequent returns that ranged in size from approximately 301,000 (1988 production) to 1,400,000 (1975 production) fish, using the same approach to approximating overall escapement. Corresponding return per spawner rates ranged from 1.1 to 4.5, averaging 2.5 for all years combined.

Yukon River fall chum salmon return primarily as age-4 or age-5 fish, although age-3 and age-6 fish also contribute to the run. A Ricker spawner-recruit model was used to predict the returns of fall chum salmon from the 1993 to 1996 parent-years that will contribute to the 1999 run. This process resulted in a projection of 1,197,000 fall chum salmon with the following approximate age composition:

Age-3 fish	29,000	(1996 Brood Year)
Age-4 fish	769,000	(1995 Brood Year)
Age-5 fish	392,000	(1994 Brood Year)
Age-6 fish	7,000	(1993 Brood Year)

However, there is a high level of uncertainty associated with the 1999 Yukon River fall chum salmon outlook, given the widespread failure of salmon runs in Western Alaska in 1997 and 1998. It has been speculated that the failures are likely an artifact of poor marine survival resulting from or accentuated by localized weather conditions in the Bering Sea. The weak runs have been attributed to reduced productivity and not the result of low levels of parental escapement.

The major contributor to the 1999 fall chum salmon run is anticipated to be age-4 fish returning from the parent year 1995. In that year a very strong fall chum salmon run was realized, with excellent escapements observed throughout the drainage. All escapement goals were reached for the second consecutive year. However, should the factor(s) that affected the productivity of fish from the parent years that returned in 1998 (and possibly 1997) carry over to fish expected to return in 1999, then a scenario similar to that observed in 1998 could be manifested. If so, the return of Yukon River fall chum salmon in 1999 could materialize at only 46 percent of the projection of 1,197,000 fish. This produces a range in the 1999 projected run size of approximately 550,000 to 1,197,000 fall chum salmon. The potential for another weak return is based upon the speculation that longer-term climatic changes taking place in the North Pacific Ocean and Bering Sea may result in continuing low salmon production. In addition, cold temperatures that were accompanied by little snow cover during the winter of 1995-96 may also have an adverse effect upon the major age class (age-4) expected to return in 1999.

Coho Salmon

Although comprehensive escapement information on Yukon River drainage coho salmon is lacking, it is known that coho salmon have later and overlapping run timing with fall chum salmon and primarily return as age-4 fish. Assuming average survival, an average to above average return of coho salmon would be anticipated in 1999, based upon parental escapement levels observed in several spawning streams in 1995. However, should environmental factors that may have contributed

to the Western Alaska salmon run failures in 1997 and 1998 also affect marine survival of coho salmon, then a below average run of coho salmon could materialize in 1999.

The BOF recently adopted a Yukon River coho salmon management plan that would allow a directed commercial coho salmon fishery, but only under very unique conditions. Such a directed commercial coho salmon fishery is not likely to occur in 1999, and it is anticipated that any commercial harvest of coho salmon will be dependent upon the abundance of, and incidental to, the harvest of fall chum salmon.

CAPE ROMANZOF DISTRICT HERRING FISHERY

Introduction

Pacific herring (*Clupea harengus pallasii*) are present in coastal waters of the Yukon Area during May and June. Spawning populations occur primarily in the Cape Romanzof area in Kokechik Bay and Scammon Bay (Appendix F.1) where spawning habitat consists of rocky beaches and rockweed (*Fucus*). The arrival of herring on the spawning grounds is greatly influenced by ocean water temperature and ice conditions. Typically herring appear immediately after ice breakup. Spawning usually occurs between mid-May and mid-June.

Local residents utilize herring for subsistence purposes. In addition, a commercial herring sac-rope fishery has occurred in the Cape Romanzof District since 1980. The Cape Romanzof District consists of all state waters from Dall Point to 62 degrees north latitude (Appendix F.1). In 1982, the BOF reduced the area open to commercial fishing by closing the waters outside of Kokechik Bay. Gillnets are the only legal commercial gear type. The use of mechanical shakers has been prohibited since 1988. Limited entry to the fishery began with a moratorium on new entrants in 1988. The fishery is now limited to 101 permits.

A total of \$31,200 in State funds were allocated to CF to manage the commercial fishery and conduct herring research studies at Cape Romanzof in May and June of 1998, not including permanent staff salaries.

Commercial Fishery 1998

Commercial harvests increased steadily after inception of the fishery in 1980, reaching a peak harvest of 1,865 tons in 1986. Since 1986, there has been a trend of decreasing harvests.

In 1998, a total of 727 tons of Pacific herring were harvested by 41 fishermen utilizing 41 fishing vessels (Appendix F.2 and F.4). The commercial harvest was 21 percent above the recent five-year-average (1993 to 1997) of 600 tons. Sac roe comprised 85 percent, (617 tons) of the harvest. The average sac roe recovery was 10.0 percent. A total of 110 tons of herring were purchased as bait. The commercial harvest was allowed to reach near the midpoint of the preseason harvest projection of 650 to 850 tons. The commercial fishery consisted of 11 fishing periods, which were allowed between May 20 and May 29. Fishing periods ranged from 1.5 hours to 5 hours in duration for a total

fishing time of 35 hours (Appendix F.2 and F.3). Fishing gear was restricted to one 50-fathom gillnet per vessel throughout the commercial season.

The estimated exvessel value of the 1998 harvest was \$131,000 (Appendix F.4). Average price for herring sac roe was \$200 per ton at 10 percent roe recovery. The bait herring consisted of deliveries less than 8 percent roe and averaged \$65 per ton. One company purchased herring. This company was represented by one processing vessel and five tenders during the fishery (Appendix F.6). Fishing effort was equal to the lowest on record in 1993. Local Alaskan residents (defined as residents of Chevak, Hooper Bay, and Scammon Bay) accounted for 98 percent (40 permits) of the effort and 98 percent (714 tons) of the harvest.

As in other recent years, the fishery was put on a one-hour advance notice prior to opening the commercial fishery. A countdown was provided fishermen prior to the opening and closing of each period on VHF radio. Commercial fishing periods were scheduled prior to high tide. In coordination with ADF&G, commercial fishermen provided catch samples for evaluation by industry representatives prior to commercial periods (Appendix F.7). Samples were collected relatively early on the incoming tide to provide time for announcing periods. Typically, the samples indicated a high percentage of ripe females. Additionally, larger mesh sizes usually resulted in higher percentages of ripe females and higher roe recovery, while smaller mesh size catches generally had a lower roe recovery. Several fishing periods were announced several hours in advance based on reports of good roe quality during the prior fishing period.

The overall exploitation rate of herring was estimated postseason to be approximately 16.2 percent of the available biomass (Appendix F.4). A total of 583 herring were sampled from the commercial harvest. Samples were collected from 2-5/8 inch, 2-7/8 inch, 3 inch, 3-1/16 inch, 3-1/8 inch, and 3-1/4 inch mesh size gillnets. The estimated age composition of the commercial samples based on scale analysis was: age-5: 0.4 percent; age-6: 0.4 percent; age-7: 10.9 percent; age-8: 21.1 percent; age-9: 3.6 percent; age-10: 34.6 percent; age-11: 14.1 percent; age-12: 4.5 percent; age-13: 5.7 percent; and age-14 and older: 4.9 percent (Appendix F.11 and F.12).

FWP officers were not present at Cape Romanzof in 1998. However, fishermen followed fishing period opening and closing times very well and buyers were timely and accurate with verbal reporting of purchases.

Subsistence Fishery 1998

During 1998, a subsistence harvest of 1.7 tons of herring was estimated to have been taken by 16 fishing families from Hooper Bay, Chevak, and Scammon Bay (Appendix F.8). In addition, 6 families harvested 585 pounds of herring spawn-on-kelp (fucus) for subsistence purposes (Appendix F.9). Mail-out questionnaires were used to collect subsistence harvest information. A total of 26 households responded out of a total of 214 identified households that were mailed questionnaires. The subsistence harvest and effort figures represent only the harvest, which was reported. Therefore, the reported harvest is a minimum estimate since not all fishing families were contacted and not all households who received questionnaires returned them. A majority of the fishermen that responded to questionnaires reported herring abundance appeared to be more in 1998 than in 1997.

Stock Status

Due to excessive water turbidity in the Cape Romanzof area, it is usually not possible to estimate herring biomass using aerial survey techniques. Herring biomass has been estimated using a combination of information from aerial surveys, test and commercial catches, spawn deposition, and age composition. Three aerial surveys were flown during the 1998 season from May 20 through May 29 (Appendix F.10). A total of 1.53 hours were spent surveying the district. Because of poor survey conditions due to turbid water conditions, no aerial survey biomass estimate was possible in 1998. Based on spawn deposition study results and herring age composition, the 1998 biomass was estimated postseason to be between 4,000 and 5,000 tons with a midpoint of 4,500 tons. This is a decrease from the 1997 biomass estimate of between 4,500 and 5,500 tons.

Test fishing with variable mesh gillnets has been conducted since 1978 to determine distribution, timing and relative abundance of spawning herring, and to collect samples for age, sex, size and relative maturity information. ADF&G from conducted test fishing May 18 through June 7, 1998. A total of 1,998 herring were caught of which 1,319 fish were sampled for biological data. Herring comprised approximately 100 percent of the total catch of schooling species. Other fish captured during test fishing included flounder, saffron cod, sculpin, smelt, and whitefish.

The age composition of the variable mesh test gillnet samples showed a healthy range of ages. Age-5, 6, 7, 8, 9, 10, 11 and 12 herring accounted for 20.0 percent, 2.3 percent, 18.8 percent, 18.2 percent, 2.9 percent, 21.2 percent, 8.4 percent and 2.7 percent of test fishing samples, respectively (Appendix F.13 and F.14). Age-13 and older herring comprised 3.5 percent test fishing samples. Newly recruited age-3 and age-4 herring represented 0.3 percent and 1.7 percent of test fishing samples.

Qualitative spawn deposition surveys have been conducted annually to document herring spawn distribution. Qualitative spawn deposition surveys began on May 15. The first observations were recorded on May 18 in Kokechik Bay. The spawn deposition during this initial spawning event was light.

ADF&G initiated a new quantitative spawn deposition study in 1992 to develop a spawn deposition index. The major difficulty encountered in attempting to estimate biomass utilizing spawn deposition data in the past was the loss of spawn due to storms and desiccation. To address this problem, artificial substrates were located in intertidal spawning areas prior to spawning. The artificial substrate consisted of small steel platforms with 6 inch by 12-inch rectangular pieces of astroturf attached to a steel plate on each platform. Spawn deposited on the astroturf was removed and weighed daily at low tide. Daily removal of spawn allowed measurements of new spawn deposition and decreased the problem of spawn loss due to wave action and desiccation observed in previous studies.

In 1998, artificial substrates were located in the same general spawning locations as in 1992 through 1997. Forty platforms were placed just north of the ADF&G's field camp on May 14. The largest spawn deposition within the study area occurred on May 19, 21 and 30 (Appendix F.15). The daily spawn deposition of 1,729 grams on May 19 was the largest of the season and accounted for 51 percent of the total season deposition. The spawn deposition season total index of 3,386 grams documented this year was the second lowest since the project began in 1992 and was 28 percent below the 1993-1996 average of 4,113 grams. The project had indicated a trend of increasing spawn deposition within the study area from 1992 through 1996 (Appendix F.16). However, it is uncertain whether the study area results are indicative of the total spawning biomass within the entire district.

Outlook for 1999

The projected return for 1999, based upon limited information, is expected to be between 2,800 and 3,700 tons. Age-11 herring are expected to dominate the biomass at 23 percent. Age-9 and older herring are expected to comprise approximately 59 percent of the returning biomass. The Bering Sea Herring management strategy is to harvest 0-20 percent of the estimated herring biomass. A 20 percent exploitation rate will be used to manage the fishery in 1999. The 1999 harvest projection is 560 to 740 tons with a midpoint of 650 tons.

Emergency order authority will be used to adjust the timing and length of fishing periods. It is very likely that gear will be restricted to one 50 fathom gillnet per vessel. A minimum level of biomass cannot be used to determine the opening of commercial fishing periods since turbid water conditions usually preclude aerial biomass assessments. The initial commercial fishing period will be established when it is determined that commercial quantity of marketable sac roe herring is present on the grounds. Test and commercial catch rates, number of fishing vessels, and spawn deposition observations will be used to determine timing and duration of commercial fishing periods. ADF&G anticipate considerable test fishing effort utilizing volunteer commercial fishermen to assess roe quality. If sac roe quality is good, individual fishing periods may be extended. Allowing a harvest above or below the preseason projection will depend on assessment of herring abundance through aerial surveys, cumulative spawn deposition, test and commercial catch rates, and age composition data.

OTHER MARINE AND FRESHWATER FINFISH FISHERIES

Subsistence Fishery

Many subsistence fishermen operate gillnets in the main rivers and coastal marine waters to harvest marine and freshwater finfish other than salmon and herring. Beach seines are occasionally used near spawning grounds primarily capturing salmon or other schooling species of fish. Traps and fish weirs of various designs are also used, mainly in the fall and winter months, to capture whitefish (*Coregonus sp. and Prosopium sp.*), blackfish (*Dallia pectoralis*), and burbot (*Lota lota*). Sheefish (*Stenodous leucicthys*), northern pike (*Esox lucius*), char (*Salvelinus sp.*), and "tomcod" (safron cod) (*Eleginus gracilis*) are frequently taken through the ice by hand lines. Dip nets are used in late May to early June to take smelt in the delta area and in late October to early November to take Arctic lamprey (*Lamperta japonica*) in the main Yukon River downstream of Grayling.

Subsistence fisheries, which target non-salmon species such as pike, sheefish, and whitefish are inadequately documented and their overall significance is not well known. A comprehensive subsistence use survey was conducted in the lower Yukon River in 1978-1979 (Crawford 1979). Several studies have been conducted to investigate sheefish migrations and to locate spawning areas in the Koyukuk River drainage (Alt 1968, 1969, 1970, 1974) and in the main Yukon River between Stevens Village and Fort Yukon (Alt 1986). In 1997 and 1998, a sheefish tagging and radio telemetry study was conducted in cooperation by the USFWS, NMFS and ADF&G near Rampart. Fish wheels operated as part of a fall chum salmon mark-recapture study were utilized as part of this project. Adult sheefish captured at the Yukon River tagging site were marked with conventional tags (1,297 in 1997, 800 in 1998) and selected individuals were tagged with pulse-

coded radio transmitters (25 in 1997, 35 in 1998). Movement information collected during aerial radio tracking surveys was compared with data from remote tracking stations. All of the radio-tagged fish that moved past the stations were recorded. During the summers of 1997 and 1998, many of the radio tags were later relocated upstream between Fort Yukon and the Circle area. Later in the fall of 1997 and 1998, a number of marked sheefish were recaptured near Emmonak.

The spring sheefish migration occurs just prior to and during the beginning of the upstream migration of chinook salmon. A limited number of sheefish are harvested during late May and early June in the Lower Yukon River as sheefish migrate upriver. Fish wheels take relatively small numbers of whitefish and sheefish in the upper Yukon and Tanana Rivers during the commercial salmon fishery. Since 1993, subsistence salmon surveys included the collection of freshwater finfish harvest data. Estimated and reported subsistence catches of freshwater finfish from subsistence surveys in 1998 are presented in Appendix G.1 and subsistence catches of freshwater finfish taken under authority of a permit in the Upper Yukon Area in 1998 are presented in Appendix G.2.

Commercial Fishery

Regulations adopted by BOF allow ADF&G to issue permits for the commercial harvest of freshwater species of fish such as whitefish, sheefish, char, northern pike, blackfish and Arctic lamprey. Commercial fisheries for species other than salmon have been allowed in widely scattered locations throughout the Yukon and Tanana River drainages and in the Colville River on the North Slope. The Colville River is located in the Northern Area. Most of these fisheries are limited, experimental operations, and occur only sporadically.

Permits for the taking of non-salmon species have been issued for various locations in the Lower Yukon Area. Reported harvests for those fisheries are presented in Appendix G.3. No permits were issued in 1998. Set gillnets are primarily used for taking whitefish and sheefish in the Lower Yukon Area. Typically, the catch is marketed in local village stores or in Bethel. Although not within the Yukon Area, a commercial fishery for whitefish has existed in the Colville River delta (located approximately 60 miles west of Prudhoe Bay) since 1964. This report is used to document the commercial fishing activities on the Colville River (Appendix G.4). Fishing generally takes place during late June and July for broad and humpback whitefish, and October through early December for arctic and least cisco. Set gillnets are used as capture gear, and fishing during fall months occurs under the ice. Not all fish reported on permits for this area are sold. In the Upper Yukon Area, commercial freshwater fisheries targeting primarily whitefish have been permitted in recent years, although no permits were issued in 1998 (Appendix G.5). Permit authorization is not required for the sale of these species when taken incidentally during commercial salmon fishing (Appendix G.6-G.8).

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TABLES AND FIGURES

Table 1. Guideline harvest ranges and mid-points for commercial harvest of chinook, summer chum and fall chum salmon, Yukon Area, Alaska, 1998.

Chinook Salmon						
District or Subdistrict	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	60,000	89.1	90,000	91.6	120,000	92.9
3	1,800	2.7	2,000	2.0	2,200	1.7
4	2,250	3.3	2,550	2.6	2,850	2.2
5A, B, C	2,400	3.6	2,600	2.6	2,800	2.2
5D	300	0.4	400	0.4	500	0.4
6	600	0.9	700	0.7	800	0.6
Total	67,350	100.0	98,250	100.0	129,150	100.0
Summer Chum Salmon						
District or Subdistrict	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	251,000	62.8	503,000	62.9	755,000	62.9
3	6,000	1.5	12,500	1.6	19,000	1.6
4A ^a	113,000	28.3	225,500	28.2	338,000	28.2
4B, C	16,000	4.0	31,500	3.9	47,000	3.9
5	1,000	0.3	2,000	0.3	3,000	0.3
6	13,000	3.3	25,500	3.2	38,000	3.2
Total	400,000	100.0	800,000	100.0	1,200,000	100.0
Anvik River Management Area roe cap of 100,000 pounds						
Fall Chum Salmon						
District or Subdistrict	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1, 2, and 3	60,000	82.5	140,000	71.2	220,000	68.6
4B, C	5,000	6.9	22,500	11.4	40,000	12.5
5A, B, C	4,000	5.5	20,000	10.2	36,000	11.2
5D	1,000	1.4	2,500	1.3	4,000	1.2
6	2,750	3.8	11,625	5.9	20,500	6.4
Total	72,750	100.0	196,625	100.0	320,500	100.0

^a Or the equivalent roe poundage of 61,000 to 183,000 pounds or some combination of fish and pounds of roe. Anvik River Management Area has an additional roe cap of 100,000 pounds which is not included in Subdistrict 4-A's guideline harvest range.

Table 2. Total utilization of salmon by district and country, Yukon River drainage, 1998. ^a

District	Fishery	Chinook	Summer Chum	Fall Chum	Coho
1	Commercial	25,413	21,270	0	0
	Subsistence	7,242	26,888	3,163	2,171
	<u>Test Fish Sales</u>	<u>878</u>	<u>2,935</u>	<u>0</u>	<u>0</u>
	Total	33,533	51,093	3,163	2,171
2	Commercial	16,806	6,848	0	1
	Subsistence	9,455	26,280	4,482	2,297
	<u>Test Fish Sales</u>	<u>48</u>	<u>84</u>	<u>0</u>	<u>0</u>
	Total	26,309	33,212	4,482	2,298
3	Commercial	0	0	0	0
	Commercial Related ^b	0	0	0	0
	<u>Subsistence</u>	<u>4,514</u>	<u>6,472</u>	<u>1,561</u>	<u>400</u>
	Total	4,514	6,472	1,561	400
Total Lower Yukon Area	Commercial	42,219	28,118	0	1
	Commercial Related ^b	0	0	0	0
	<u>Subsistence</u>	<u>21,211</u>	<u>59,640</u>	<u>9,206</u>	<u>4,868</u>
	<u>Test Fish Sales</u>	<u>926</u>	<u>3,019</u>	<u>0</u>	<u>0</u>
	Total	64,356	90,777	9,206	4,869
4	Commercial	0	0	0	0
	Commercial Related ^b	0	0	0	0
	<u>Subsistence</u>	<u>15,801</u>	<u>18,046</u>	<u>7,898</u>	<u>2,593</u>
	Total	15,801	18,046	7,898	2,593
5	Commercial	517	96	0	0
	Commercial Related ^b	0	14	0	0
	<u>Subsistence</u>	<u>14,802</u>	<u>2,314</u>	<u>31,393</u>	<u>2,839</u>
	Total	15,319	2,424	31,393	2,839
6	Commercial	882	397	0	0
	Commercial Related ^b	81	173	0	0
	<u>Subsistence</u>	<u>1,919</u>	<u>6,004</u>	<u>14,370</u>	<u>7,472</u>
	<u>Personal use</u>	<u>357</u>	<u>84</u>	<u>2</u>	<u>9</u>
	Total	3,239	6,658	14,372	7,481
Total Upper Yukon Area	Commercial	1,399	493	0	0
	Commercial Related ^b	81	187	0	0
	<u>Subsistence</u>	<u>32,522</u>	<u>26,364</u>	<u>53,661</u>	<u>12,904</u>
	<u>Personal use</u>	<u>357</u>	<u>84</u>	<u>2</u>	<u>9</u>
	Total	34,359	27,128	53,663	12,913
Total Yukon Area (Alaska)	Commercial	43,618	28,611	0	1
	Commercial Related ^b	81	187	0	0
	<u>Subsistence</u>	<u>53,733</u>	<u>86,004</u>	<u>62,867</u>	<u>17,772</u>
	<u>Personal use</u>	<u>357</u>	<u>84</u>	<u>2</u>	<u>9</u>
	Sport Fish ^c	-	-	-	-
	<u>Test Fish Sales</u>	<u>926</u>	<u>3,019</u>	<u>0</u>	<u>0</u>
	Total	98,715	117,905	62,869	17,782
Total Canada	Commercial	390	0	0	0
	Aboriginal ^d	5,547	0	7,904	214
	<u>Sport Fish</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	Total	5,937	0	7,904	214
Grand Total	Commercial	44,008	28,611	0	1
	Commercial Related ^b	81	187	0	0
	<u>Subsistence ^f</u>	<u>59,280</u>	<u>86,004</u>	<u>70,771</u>	<u>17,986</u>
	<u>Personal use</u>	<u>357</u>	<u>84</u>	<u>2</u>	<u>9</u>
	<u>Sport Fish</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>Test Fish Sales</u>	<u>926</u>	<u>3,019</u>	<u>0</u>	<u>0</u>
	Total	104,652	117,905	70,773	17,996

^a Commercial harvest includes only fish sold in the round.

^b Commercial related is the estimated harvest of females to produce roe sales.

^c Data not available yet.

^d Combined Aboriginal and domestic fisheries; includes Porcupine River Aboriginal fishery harvest. Includes 737 chinook salmon harvested by Aboriginal test fishery.

^f Includes Canadian Aboriginal and domestic fisheries.

Table 3. Preliminary subsistence and personal use salmon harvest estimates which include test fish harvests given away for subsistence use, and related information, Yukon Area, 1998.

Village ^a	Survey Date or Permit Village	Fishing Households ^b	Dogs	Estimated Harvest				Primary Gear Used		
				Chinook	Summer Chum	Fall Chum	Coho	Set Nets	Drift Nets	Fish Wheels
Hooper Bay	9/16-9/17	102	263	13	261	0	145	102	0	0
Scammon Bay	9/16	47	240	378	1,101	34	204	47	0	0
Coastal District Total ^c		149	503	391	1,362	34	349	149	0	0
Sheldon Point	9/11-9/12	21	86	527	1,872	266	229	21	0	0
Alakanuk	9/11-9/12, 9/14	86	122	1,930	5,643	665	292	67	19	0
Emmonak ^d	9/10-9/11, 9/14	84	128	2,396	9,558	867	696	12	72	0
Kotlik ^e	9/13-9/14	65	219	2,389	9,815	1,365	954	65	0	0
<i>District 1 Subtotal</i>		256	555	7,242	26,888	3,163	2,171	165	91	0
Mountain Village ^f	9/22	95	191	2,533	9,596	2,031	954	16	79	0
Pitkas Point	9/23	20	92	817	1,302	233	305	7	13	0
St. Marys	9/21	63	162	2,679	9,047	416	290	5	58	0
Pilot Station ^h	9/26-9/27	46	170	1,715	5,042	1,162	413	8	36	2
Marshall	9/28-9/29	30	351	1,711	1,293	640	335	5	25	0
<i>District 2 Subtotal</i>		254	966	9,455	26,280	4,482	2,297	41	211	2
Russian Mission	9/29	24	111	1,314	702	137	233	11	13	0
Holy Cross	9/25	30	124	2,648	269	1,095	100	6	24	0
Shageluk	9/28	19	159	552	5,501	329	67	16	3	0
<i>District 3 Subtotal</i>		73	394	4,514	6,472	1,561	400	33	40	0
Lower Yukon River Total		583	1,915	21,211	59,640	9,206	4,868	239	342	2
Anvik	9/28-9/29	20	113	1,025	2,139	388	20	14	4	2
Grayling	9/27-9/28	30	150	2,177	4,032	648	133	9	15	6
Kaltag	10/5	36	112	1,870	175	499	71	9	27	0
Nulato	10/6	73	209	4,147	3,518	367	34	11	54	8
Koyukuk	10/7	15	105	800	1,819	1,583	421	6	9	0
Galena	10/8-10/9	47	248	1,668	2,333	1,915	322	19	19	9
Ruby	10/8	24	366	3,891	2,251	2,427	1,459	12	0	12
<i>District 4 Yukon River Subtotal</i>		245	1,303	15,578	16,267	7,827	2,460	80	128	37
Huslia	10/6-10/7	14	171	23	449	0	128	7	7	0
Hughes	10/5	14	74	91	334	60	5	14	0	0
Allakaket	10/13	13	119	85	901	11	0	13	0	0
Alatna	10/13	3	10	4	13	0	0	3	0	0
Bettles	10/14	2	54	20	82	0	0	2	0	0
<i>Koyukuk River Subtotal</i>		46	428	223	1,779	71	133	39	7	0
<i>District 4 Subtotal</i>		291	1,731	15,801	18,046	7,898	2,593	119	135	37
Tanana ^j	10/26-10/27	45	424	5,212	1,966	24,956	2,572	28	0	17
Rampart	10/12	5	29	885	19	100	20	5	0	0
Fairbanks NSB ^k	permits	27	213	1,231	57	96	11	26	0	1
Stevens Village ^m	10/20, permits	19	116	1,232	171	1,076	63	18	0	1
Birch Creek	10/23	4	11	48	0	0	0	4	0	0
Beaver	10/22	13	41	470	15	409	0	13	0	0
Fort Yukon	10/21-10/22	100	498	1,771	30	3,035	39	55	0	45
Circle	permits	7	80	685	1	37	0	1	0	6
Central	permits	6	22	170	1	0	0	6	0	0
Eagle	permits	32	218	2,473	52	543	132	24	0	8
Other ⁿ	permits	9	65	446	2	50	2	8	0	1
<i>District 5 Yukon River Subtotal</i>		267	1,717	14,623	2,314	30,302	2,839	188	0	79

-Continued-

Table 3. (page 2 of 2).

Village ^a	Survey Date or Permit Village	Fishing Households ^b	Dogs	Estimated Harvest				Primary Gear Used		
				Chinook	Summer Chum	Fall Chum	Coho	Set Nets	Drift Nets	Fish Wheels
Venetie	10/20	16	165	168	0	658	0	16	0	0
Chalkyitsik	10/27-10/28	6	58	11	0	433	0	6	0	0
<i>Chandalar/Black Rivers Subtotal</i>		22	223	179	0	1,091	0	22	0	0
<i>District 5 Subtotal</i>		289	1,940	14,802	2,314	31,393	2,839	210	0	79
Manley	permits	14	406	214	215	4,411	2,362	9	0	5
Minto ^p	permits	26	204	275	148	505	31	21	0	4
Nenana	permits	27	469	1,207	5,041	6,781	3,519	11	0	16
Healy	permits	6	154	18	0	1,642	765	3	0	3
Fairbanks NSB ^r	permits	75	249	552	682	962	795	54	0	10
Delta Junction	permits	0	15	0	0	0	0	0	0	0
Other ^s	permits	17	113	10	2	71	9	14	0	0
<i>District 6 Tanana River Subtotal</i>		165	1,610	2,276	6,088	14,372	7,481	112	0	38
Upper Yukon River Total		745	5,281	32,879	26,448	53,663	12,913	441	135	154
Survey Village Subtotals		1,231	5,491	45,722	76,603	44,031	8,781	652	477	102
Subsistence Permit Subtotals		194	2,208	6,924	6,117	15,096	7,617	133	0	46
Subsistence Test Fish Subtotals ^t		-	-	1,478	4,646	3,774	1,723	-	-	-
Subsistence Harvests Subtotal		1,425	7,699	54,124	87,366	62,901	18,121	785	477	148
Personal Use Permit Subtotals		52	-	357	84	2	9	44	0	8
Alaska, Yukon River Total ^v		1,328	7,196	54,090	86,088	62,869	17,781	680	477	156
Alaska, Yukon Area Total		1,477	7,699	54,481	87,450	62,903	18,130	829	477	156

- a Data collected by Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries. Survey data is expanded for number of fishing households, number of dogs, and harvest. Permit data is unexpanded. The number of dogs is based on information obtained from permits issued, while the number of fishing households and their harvest is based on returned permits. Gear data represents the primary gear types used by fishing households. Of the 494 permits issued, 45 households obtained permits for more than one location.
- b Estimated number of households that fished in surveyed communities or number of permit households who reported fishing in permit required areas.
- c A 1986 Hooper Bay salmon tagging study conducted by the Bering Sea Fishermen's Association (BSFA) suggested that harvests in the Nuok Spit area of Hooper Bay intercepted Yukon River and Norton Sound chum salmon stocks.
- d Includes 712 chinook, 1,228 summer chum, 764 fall chum, and 342 coho salmon from ADF&G test fish catches.
- f Includes 323 chinook, 1,062 summer chum, 1,236 fall chum, and 450 coho salmon from ADF&G test fish catches.
- g Includes 8 chinook, 664 fall chum and 567 coho salmon from BSFA test fish catches.
- h Includes 435 chinook, 2,209 summer chum, 1,110 fall chum, and 364 coho salmon from ADF&G test fish catches.
- j Includes 147 summer chum salmon from United States Fish Wildlife Service (USFWS) "Rapids" tagging fish wheel catches.
- k Fairbanks North Star Borough (Fairbanks NSB) households that obtained a permit and indicated they fished in a Yukon River permit required area.
- m Permit harvest information from Stevens Village residents was used to compliment the information obtained by the survey.
- n Other Includes residents of Manley, Nenana, Minto and the Upper Tanana River drainage villages of Northway and Tok, who obtained a household permit and fished in a Yukon River permit required area.
- p Number of fishing households includes 17 Tolovana River pike permits that were fished.
- r Fairbanks North Star Borough (Fairbanks NSB) households that obtained a permit and indicated they fished in the Tanana River permit required area. The number of fishing households includes 14 Tolovana River pike permits that were fished.
- s Other includes residents of Slana, Gakona, Galena, Paxson and the Upper Tanana River drainage villages of Dot Lake, Northway, Tanacross, and Tok who fished in the Tanana River.
- t Test fish given away for subsistence use.
- v Yukon River Total does not include Coastal District.

Table 4. Preliminary reported subsistence and personal use salmon harvested under the authority of a permit, listed by permit area, Yukon Area, 1998.

Permit Fishing Area	Type	Permit ^a		Percent Returned	Number of Permits Returned that Fished	Reported Harvest ^a			
		Issued	Returned			Chinook	Summer Chum	Fall Chum	Coho
Subsistence Use									
Yukon River near Haul Road Bridge	SY	48	47	98%	31	1,685	103	156	15
Yukon River near Circle and Eagle	SE	101	95	94%	54	3,562	55	630	132
Tanana River Subdistrict 6A	SA	25	25	100%	15	510	519	3,648	1,288
Tanana River Subdistrict 6B	SB	94	84	89%	46	1,406	5,485	9,573	5,937
Tanana River Upstream of Subdistrict 6C	SU	46	46	100%	17	0	0	71	9
Kantishna River Subdistrict 6A	SK	6	6	100%	4	2	0	1,078	238
Tolovana River Pike	ST	70	64	91%	31	1	0	0	0
Subsistence Permit Subtotals		390	367	94%	198	7,166	6,162	15,156	7,619
Personal Use									
Tanana River Subdistrict 6C	PC	103	101	98%	52	357	84	2	9
Tanana River Whitefish	PW	1	1	100%	0	0	0	0	0
Personal Use Permit Subtotals		104	102	98%	52	357	84	2	9
Permit Totals ^d		494 ^b	469	95%	250 ^c	7,523	6,246	15,158	7,628

a Includes 1998 permit information received as of March 18, 1999.

b Includes 45 households that were issued permits for more than one different area, includes 31 Minto households who were issued Tolovana River drainage (ST) pike permits.

c Includes four households that fished in two different permit areas.

d Four subsistence permits were issued, returned, and fished from Stevens Village residents with a harvest totaling 242 chinook, 45 summer chum, 60 fall chum, and 2 coho salmon.

Table 5. Disaster relief salmon provided to Yukon Area communities, 1998.

Community	Estimated Number of chum salmon distributed by Emergency Services a	Estimated Number of pink salmon distributed by Food Bank b	Estimated Number of pink salmon distributed by PEPPA c
Chevak	2,956	853	
Hooper Bay	5,368		
Scammon Bay	200		
Pilot Station		450	
Kaltag			656
Huslia	1,417		3,500
Hughes	315		1,313
Allakaket/Alatna	1,103		6,344
Bettles			438
Galena			2,406
Ruby			438
Tanana			12,250
Fort Yukon			7,656
Circle			656 d
Eagle			5,469
Manley			2,625
Minto			3,938
Total	11,359	1,303	47,689

- a Division of Emergency Services purchased chum salmon for human consumption in Kotzebue with disaster relief funds, the fish were processed and stored in Unalakleet prior to transporting the fish to the communities indicated.
- b Food Bank of Alaska (Anchorage) arranged shipment of frozen pink salmon and cod bellies, for human consumption, from North Pacific Seafoods in Cordova. The product shipped was estimated to be 90 percent pink salmon averaging 5-6 pounds per fish.
- c People for Emergency Preparedness for Animals (PEPPA) of Anchorage provided pink salmon carcasses from Solomon Gulch Hatchery, roe removed, for feeding dogs. Information provided was in numbers of totes shipped. Estimated number of fish was based on the average weight per fish (4 pounds) and the average weight of the totes (875 pounds). Fish were allocated according to amount requested by individuals in each community.
- d Fish shipped to Fort Yukon was shared with households from the communities of Birch Creek, Chalkyitsik, and Venetie.

Table 6. Commercial salmon and salmon roe sales by statistical area, Yukon Area, 1998.^a

Statistical Area	Chinook			Summer Chum			Fall Chum			Coho			Total Salmon		
	Numbers	Roe	Estimated Harvest ^b	Numbers	Roe	Estimated Harvest ^b	Numbers	Roe	Estimated Harvest ^b	Numbers	Roe	Estimated Harvest ^b	Numbers	Roe	Estimated Harvest ^b
334-11	226	0	226	54	0	54	-	-	-	-	-	-	280	0	280
12	1,741	0	1,741	2,583	0	2,583	-	-	-	-	-	-	4,324	0	4,324
13	654	0	654	441	0	441	-	-	-	-	-	-	1,095	0	1,095
14	1,591	0	1,591	2,275	0	2,275	-	-	-	-	-	-	3,866	0	3,866
15	7,264	0	7,264	5,115	0	5,115	-	-	-	-	-	-	12,379	0	12,379
16	1,934	0	1,934	730	0	730	-	-	-	-	-	-	2,664	0	2,664
17	7,822	0	7,822	6,601	0	6,601	-	-	-	-	-	-	14,423	0	14,423
18	4,181	0	4,181	3,471	0	3,471	-	-	-	-	-	-	7,652	0	7,652
Subtotal District 1	25,413	0	25,413	21,270	0	21,270	0	0	0	0	0	0	46,683	0	46,683
334-21	2,203	0	2,203	710	0	710	-	-	-	-	-	-	2,913	0	2,913
22	6,081	0	6,081	2,350	0	2,350	-	-	-	1	-	1	8,432	0	8,432
23	2,245	0	2,245	1,079	0	1,079	-	-	-	-	-	-	3,324	0	3,324
24	4,613	0	4,613	2,351	0	2,351	-	-	-	-	-	-	6,964	0	6,964
25	1,664	0	1,664	358	0	358	-	-	-	-	-	-	2,022	0	2,022
Subtotal District 2	16,806	0	16,806	6,848	0	6,848	0	0	0	1	0	1	23,655	0	23,655
334-31	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
32	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
Subtotal District 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Lower Yukon	42,219	0	42,219	28,118	0	28,118	0	0	0	1	0	1	70,338	0	70,338

-Continued-

Table 6. (p. 2 of 2)

Statistical Area	Chinook			Summer Chum			Fall Chum			Coho			Total Salmon		
	Number	Roe	Estimated Harvest ^b	Numbers	Roe	Estimated Harvest ^b	Number	Roe	Estimated Harvest ^b	Number	Roe	Estimated Harvest ^b	Number	Roe	Estimated Harvest ^b
334-42	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
43	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
44	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
45	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
46	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
47	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
Subtotal District 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
334-51	0	0	0	0	0	0	-	-	-	-	-	-	0	0	0
52	279	0	279	37	13	51	-	-	-	-	-	-	316	13	330
53	196	0	196	59	0	59	-	-	-	-	-	-	255	0	255
54	11	0	11	0	0	0	-	-	-	-	-	-	11	0	11
55	31	0	31	0	0	0	-	-	-	-	-	-	31	0	31
Subtotal District 5	517	0	517	96	13	110	0	0	0	0	0	0	613	13	627
334-61	217	0	217	56	0	56	-	-	-	-	-	-	273	0	56
62	431	208	496	202	109	337	-	-	-	-	-	-	633	317	337
63	234	52	250	139	31	177	-	-	-	-	-	-	373	83	177
Subtotal District 6	882	260	963	397	140	570	0	0	0	0	0	0	1,279	400	1,533
Total Upper Yukon	1,399	260	1,480	493	153	680	0	0	0	0	0	0	1,892	413	2,160
Grand Total Yukon Area	43,618	260	43,699	28,611	153	28,798	0	0	0	1	0	1	72,230	413	72,498

^a Sales reported in numbers of fish sold in the round and pounds of unprocessed roe. Does not include ADF&G test fishery sales.

^b Estimated harvest includes the estimated number of females to produce the roe sold.

Table 7. Salmon sold from Department of Fish and Game test fishing program, Yukon Area, 1998.

Districts	Gear Types	Chinook	Summer Chum	Fall Chum	Coho
1	Set Gillnet	878	2,935	0	0
2	Drift Gillnet	48	84	0	0
Yukon Area Total		926	3,019	0	0

Table 8. Salmon processors, buyers, catcher-sellers, and associated data, Yukon Area, 1998.

Commercial operation (Processing location/ buying station)	Product	District
Yukon Delta Fish Marketing CO-OP, Inc. P.O. Box 169 Emmonak, AK 99581 (Emmonak)	Frozen Salmon Fresh Salmon Chinook Chum, Coho Salmon Roe	1 and 2
Bering Sea Fisheries, Inc. 4413 83rd Ave. SE Everett, WA 98205 (Lamont Slough)	Frozen Salmon Chinook Chum, Coho Salmon Roe	1 and 2
Boreal Fisheries P.O. Box 561 Graham, WA 98338 (Old Andreafsky)	Fresh Salmon Chinook Chum, Coho Salmon Roe	1 and 2
Great Pacific Seafoods, Inc. Box 81165 Seattle, WA 98108 (Emmonak)	Fresh Salmon Chinook Chum, Coho Salmon Roe	1 and 2
North Alaska Fisheries Box 927397 Anchorage, AK 99509 (Emmonak)	Fresh Salmon Chinook Chum	1 and 2
Maserculiq Fish Processors P.O. Box 118535 Marshall, AK 99585 (Marshall)	Fresh Salmon Chinook Chum Salmon Roe	2
Great Northern Seafoods, Inc. Box 240365 Anchorage, AK 99524 (Anvik)	Frozen Salmon Chinook Chum Salmon Roe	4
Sea Crest Inc. 6240 Rockhill Circle Anchorage, AK 99516 (Galena)	Frozen Salmon Fresh Salmon Chinook, Chum Salmon Roe	4

-Continued-

Table 8. (Page 2 of 3).

Commercial operation (Processing location/ buying station)	Product	District
Yutana Fisheries PO Box 83809 Fairbanks, AK 99701 Or PO Box 38 Manley, AK 99756 (Kaltag, Manley)	Frozen Salmon Fresh Salmon Chinook, Chum, Coho Salmon Roe	4, 5, and 6
Interior Alaska Fish Processors, Inc. 2400 Davis Road Fairbanks, AK 99701 (Fairbanks, Nenana, North Pole)	Frozen Salmon Chinook, Chum, Coho Salmon Roe	4, 5, and 6
Steven's Fisheries PO Box 38 Nenana, AK 99760 (Nenana)	Frozen Salmon Fresh Salmon Chinook, Chum, Coho Salmon Roe	6
Patrick X. Moore (catcher/seller) P.O. Box 61 Tanana, Alaska 99777 (Fairbanks, Tanana)	Fresh Salmon Chinook	5
Charlie Campbell (catcher/seller) MHF Enterprise PO Box 111 Tanana, AK 99777 (Tanana)	Fresh Salmon Chinook, Chum	5
Stan J. Zuray (catcher/seller) P.O. Box 172 Tanana, AK 99777 (Fairbanks, Tanana)	Fresh Salmon Chinook	5
Linda J. Johnson (catcher/seller) P.O. Box 57 Manley Hot Springs, AK 99756 (Fairbanks)	Fresh Salmon Chinook	5
Steve O'Brien (catcher/seller) PO Box 42 Manley Hot Springs, AK 99756	Fresh Salmon Chinook	5

-Continued-

Table 8. (Page 3 of 3).

Commercial operation (Processing location/ buying station)	Product	District
Renee and Peter Merry (catcher/seller) 1293 Shypoke Drive Fairbanks, AK 99709 (Fairbanks)	Fresh Salmon Chinook, Chum	5
Robert A. Sparks (catcher/seller) P.O. Box 71774 Fairbanks, AK 99707 (Fairbanks)	Fresh Salmon Chinook	5
Darrell Carroll (catcher/seller) PO Box 217 Fort Yukon, AK 99740 (Fort Yukon)	Fresh Salmon Chinook, Chum	5
Brian Asplund (catcher/seller) PO Box 18 Circle, AK 99733 (Circle)	Fresh Salmon Chinook, Chum	5
Merrill J. Hakala (catcher/seller) 140 Front St. Fairbanks, AK 99701 (Circle, Fairbanks)	Fresh Salmon Chinook, Chum	5
Gary Hinzman (catcher/seller) 1366 Opportunity Way Fairbanks, AK 99709 (Fairbanks)	Fresh Salmon Chinook, Chum	6
John Childs (catcher/seller) 2091 Yellow Snow Rd. Fairbanks, AK 99709 (Fairbanks)	Fresh Salmon Chinook, Chum	6

Table 9. Commercial Fisheries Entry Commission salmon gear permits issued by residence, Yukon Area, 1998. ^a

District	Residence	GillNet Permits (S04Y)
1, 2, and 3	Alakanuk	76
	Anchorage	28
	Aniak	1
	Bethel	14
	Chevak	2
	Cooper Landing	1
	Dutch Harbor	1
	Eek	1
	Elim	1
	Emmonak	98
	Fairbanks	12
	Fortuna Ledge	6
	Glennallen	1
	Holy Cross	7
	Hooper Bay	2
	Iliamna	1
	Kalskag	1
	Kaltag	1
	Kodiak	1
	Koliganek	1
	Kotlik	77
	Lower Kalskag	1
	Manley Hot Springs	2
	Marshall	32
	Mountain Village	91
	Nenana	1
	Newtok	1
	Nome	1
	Palmer	1
	Pilot Station	53
	Pitkas Point	1
	Russian Mission	10
	Sand Point	1
	Scammon Bay	42
	Shaktolik	1
	Sheldon Point	25
	Sitka	1
	St. Marys	68
	St. Michael	1
	Stebbins	12
	Sutton	1
	Talkeetna	3
	Togiak	1
	Tok	1
	Unalakleet	4
	Wasilla	6
	Whittier	1
	Willow	1
	Belews Creek, NC	2
	Cameron Mills, NY	1
	Everett, WA	1
	North English, IA	1
	Rock Hill, SC	1
	Stanwood, WA	1
	Twisp, WA	1
Total Lower Yukon Area		704

-Continued-

Table 9. (p. 2 of 2).

District	Residence	GillNet Permits (S04P)	Fish Wheel Permits (S08P)	Total
4, 5, and 6	Anchorage	4	1	5
	Anchor Pt.	0	2	2
	Aniak	1	0	1
	Anvik	4	9	13
	Barrow	0	1	1
	Cantwell	1	0	1
	Circle City	0	1	1
	Dot Lake	0	1	1
	Eagle River	0	1	1
	Fairbanks	22	24	46
	Ft. Yukon	0	1	1
	Gakona	1	0	1
	Galena	4	26	30
	Grayling	5	5	10
	Holy Cross	2	0	2
	Huslia	0	1	1
	Kaltag	3	15	18
	Koyukuk	0	2	2
	Manley Hot Springs	4	7	11
	Nenana	7	20	27
	Nome	1	0	1
	North Pole	0	1	1
	Nulato	0	14	14
	Palmer	1	0	1
	Rampart	3	2	5
	Ruby	2	7	9
	Salcha	1	0	1
	Soldotna	1	0	1
	Stevens Village	1	3	4
	Tanana	3	15	18
	Wasilla	0	2	2
	North Hollywood, CA	1	0	1
	Portland, OR	0	1	1
Total Upper Yukon Area		72	162	234
Grand Total Yukon Area		776	162	938

^a Counts are for initial issues only and do not include transfers. Counts include interim use permits.

Table 10. Commercial salmon sales and estimated harvest by district and country, Yukon River drainage, 1998. ^a

District/ Subdistrict	Number of Fishermen ^b	Chinook			Summer Chum			Fall Chum			Coho		
		Sold in Round	Pounds of Roe	Estimated Harvest ^c	Sold in Round	Pounds of Roe	Estimated Harvest ^c	Sold in Round	Pounds of Roe	Estimated Harvest ^c	Sold in Round	Pounds of Roe	Estimated Harvest ^c
1	434	25,413	0	25,413	21,270	0	21,270	-	-	-	-	-	-
2	231	16,806	0	16,806	6,848	0	6,848	-	-	-	1	0	1
Subtotal	643	42,219	0	42,219	28,118	0	28,118	0	0	0	1	0	1
3	0	0	0	0	0	0	0	-	-	-	-	-	-
Total Lower Yukon	643	42,219	0	42,219	28,118	0	28,118	0	0	0	1	0	1
Anvik River	-	-	-	-	-	-	-	-	-	-	-	-	-
4-A	-	-	-	-	-	-	-	-	-	-	-	-	-
4-BC	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal District 4	0	0	0	0	0	0	0	0	0	0	0	0	0
5-ABC	15	475	0	475	96	13	110	-	-	-	-	-	-
5-D	3	42	0	42	0	0	0	-	-	-	-	-	-
Subtotal District 5	18	517	0	517	96	13	110	0	0	0	0	0	0
6	10	882	260	963	397	140	570	-	-	-	-	-	-
Total Upper Yukon	28	1,399	260	1,480	493	153	680	0	0	0	0	0	0
Total Alaska	671	43,618	260	43,699	28,611	153	28,798	0	0	0	1	0	1
Total Canada		390	0	390	-	-	-	-	-	-	-	-	-
Grand Total	671	44,008	260	44,089	28,611	153	28,798	0	0	0	1	0	1

^a Does not include ADF&G test fishery sales.

^b Number of unique permits fished by district, subdistrict or area. Totals by area may not add up due to transfers between districts or subdistricts.

^c Unless otherwise noted, estimated harvest is the number of fish sold in the round plus the estimated number of females harvested to produce roe sold (pounds of roe sold divided by weighted average roe weight per female).

Table 11. Chinook and summer chum salmon commercial harvest by district or subdistrict and by period, set and drift gillnets combined for Districts 1, 2, and 3 and set gillnets and fish wheels combined for Districts 4, 5, and 6, Yukon Area, 1998.

District 1												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds	Average Weight	Numbers	Pounds	Average Weight
1	6:00 PM	15-Jun	3:00 AM	16-Jun	9	298	1,766	32,704	18.5	422	3,049	7.2
2	6:00 PM	23-Jun	3:00 AM	24-Jun	9	378	11,812	215,517	18.2	3,465	24,214	7.0
3	6:00 PM	27-Jun	3:00 AM	28-Jun	9	398	7,225	132,454	18.3	6,605	44,822	6.8
5	12:00 AM	7-Jul	6:00 AM	8-Jul	6	304	3,399	64,740	19.0	2,974	18,699	6.3
Unrestricted												
Mesh Size Subtotal					33	432	24,202	445,415	18.4	13,466	90,784	6.7
4	10:00 PM	1-Jul	1:00 AM	2-Jul	3	239	1,211	17,790	14.7	7,804	51,623	6.6
Six Inch Maximum												
Mesh Size Subtotal					3	239	1,211	17,790	14.7	7,804	51,623	6.6
District 1 Subtotal					36	434	25,413	463,205	18.2	21,270	142,407	6.7

District 2												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds	Average Weight	Numbers	Pounds	Average Weight
1	6:00 PM	26-Jun	3:00 AM	27-Jun	9	209	6,591	113,265	17.2	1,800	12,824	7.1
2	6:00 PM	2-Jul	3:00 AM	3-Jul	9	217	7,451	133,637	17.9	3,944	26,300	6.7
3	9:00 PM	8-Jul	3:00 AM	9-Jul	6	180	2,764	51,395	18.6	1,104	7,149	6.5
Unrestricted												
Mesh Size Subtotal					24	231	16,806	298,297	17.7	6,848	46,273	6.8
Six Inch Maximum												
Mesh Size Subtotal					-	-	-	-	-	-	-	-
District 2 Subtotal					24	231	16,806	298,297	17.7	6,848	46,273	6.8

District 3													
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon			
							Numbers	Pounds	Average Weight	Numbers	Pounds	Average Weight	Pounds Roe
1	6:00 PM	26-Jun	3:00 AM	27-Jun	9	0	0	0	-	0	0	-	0
Unrestricted													
Mesh Size Subtotal					9	0	0	0	-	0	0	-	0
Six Inch Maximum													
Mesh Size Subtotal					-	-	-	-	-	-	-	-	-
District 3 Subtotal					9	0	0	0	-	0	0	-	0

Lower Yukon Area													
Districts 1, 2, and 3													
Unrestricted													
Mesh Size Subtotal					66	641	41,008	743,712	18.1	20,314	137,057	6.7	0
Six Inch Maximum													
Mesh Size Subtotal					3	239	1,211	17,790	14.7	7,804	51,623	6.6	0
Total					69	643	42,219	761,502	18.0	28,118	188,680	6.7	0

-Continued-

Table 11. (page 2 of 3)

Subdistrict 4-A												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds of Roe	Estimated Harvest 1/2	Numbers	Pounds of Roe	Estimated Harvest 1/2
-	-	-	-	-	-	-	-	-	-	-	-	-
Subdistrict 4-A Subtotal					0	0	0	0	0	0	0	0

Anvik River												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds of Roe	Estimated Harvest 1/2	Numbers	Pounds of Roe	Estimated Harvest 1/2
-	-	-	-	-	-	-	-	-	-	-	-	-
Anvik River Subtotal					0	0	0	0	0	0	0	0

Subdistricts 4-B and 4-C												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds of Roe	Estimated Harvest 1/2	Numbers	Pounds of Roe	Estimated Harvest 1/2
-	-	-	-	-	-	-	-	-	-	-	-	-
Subdistricts 4-B and 4-C Subtotal					0	0	0	0	0	0	0	0

Subdistricts 5-A, 5-B, and 5-C												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds of Roe	Estimated Harvest 1/2	Numbers	Pounds of Roe	Estimated Harvest 1/2
1	6:00 PM	23-Jul	12:00 PM	24-Jul	18	15	475	0	475	96	13	110
Subdistricts 5-A, 5-B, and 5-C Subtotal					18	15	475	0	475	96	13	110

-Continued-

Table 11. (page 3 of 3)

Subdistrict 5-D												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds of Roe	Estimated Harvest %	Numbers	Pounds of Roe	Estimated Harvest %
1	6:00 PM	26-Jul	6:00 PM	27-Jul	24	3	42	0	42	0	0	0
Subdistrict 5-D Subtotal:					24	3	42	0	42	0	0	0

Subdistricts 6-A, 6-B, and 6-C												
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Number of Fishermen	Chinook Salmon			Summer Chum Salmon		
							Numbers	Pounds of Roe	Estimated Harvest %	Numbers	Pounds of Roe	Estimated Harvest %
1	6:00 PM	17-Jul	6:00 PM	18-Jul	24	10	882	260	963	397	140	570
District 6 Subtotal					24	10	882	260	963	397	140	570

Upper Yukon Area					66	28	1,399	260	1,480	493	153	660
Districts 4, 5, and 6 Subtotal												

Yukon Area					135	671	43,618	260	43,699	28,611	153	28,798
All Districts Total												

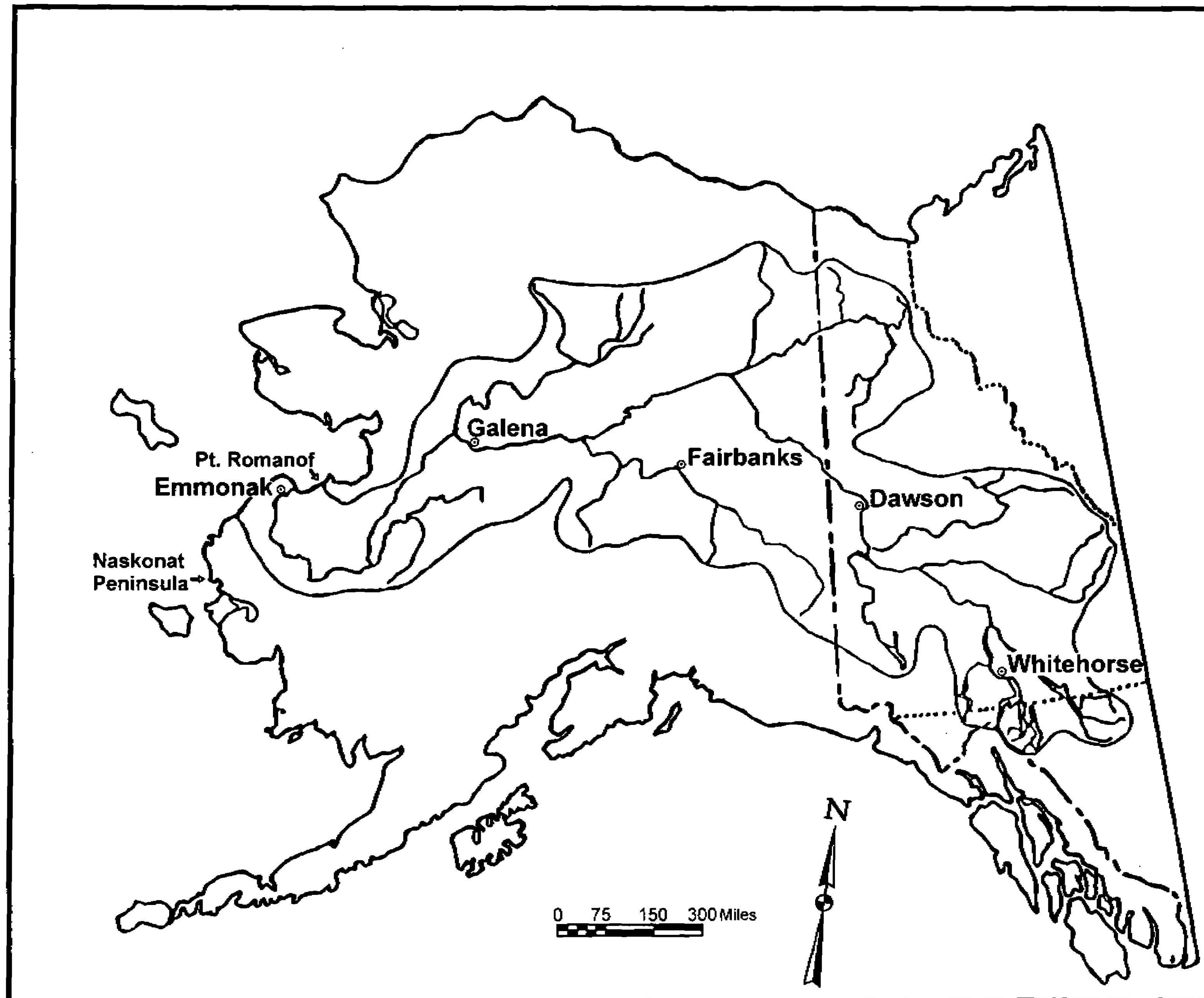


Figure 1. Map of the Yukon River Drainage.

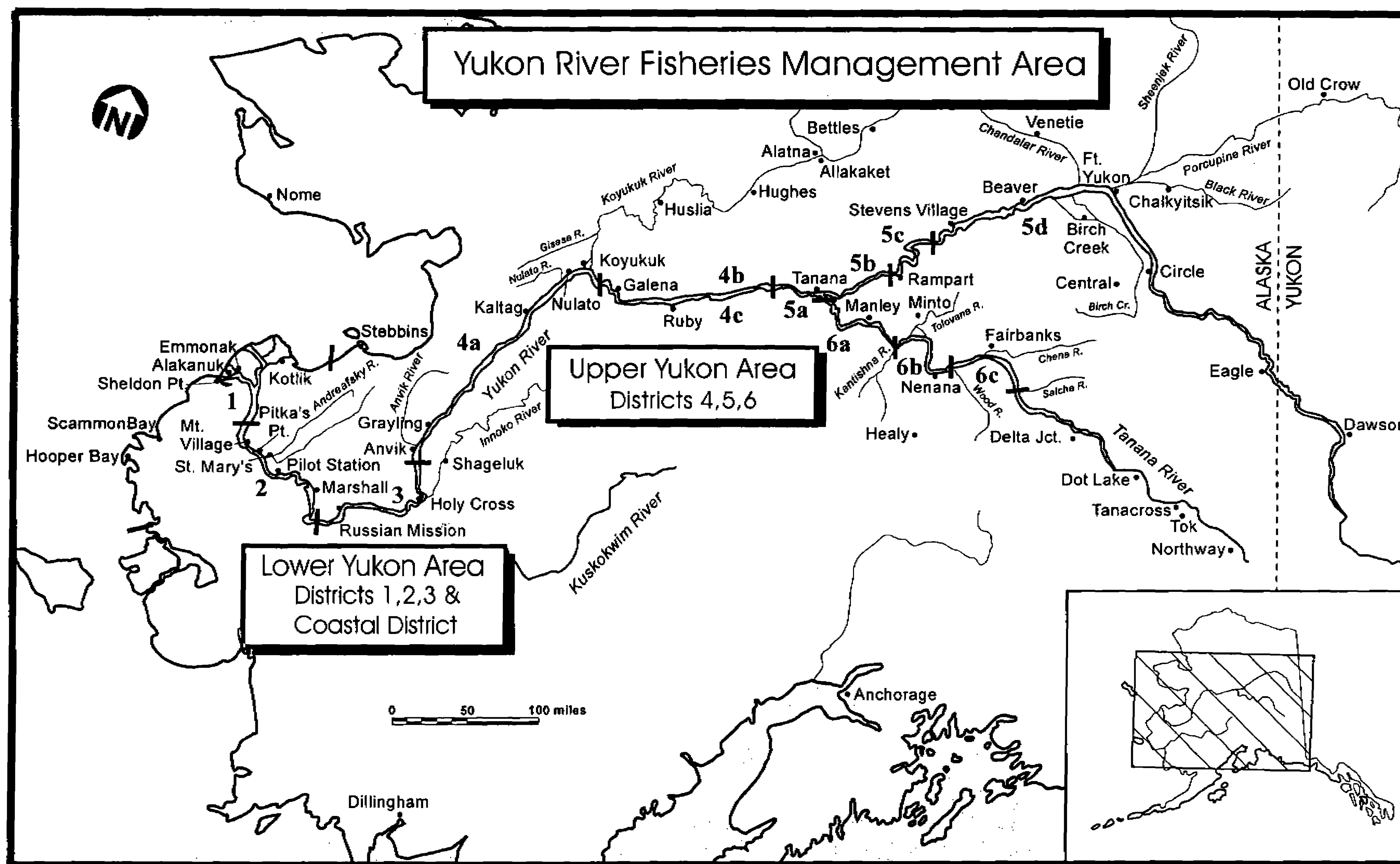


Figure 2. Map of the Alaskan portion of the Yukon River drainage showing communities and fishing districts, 1998.

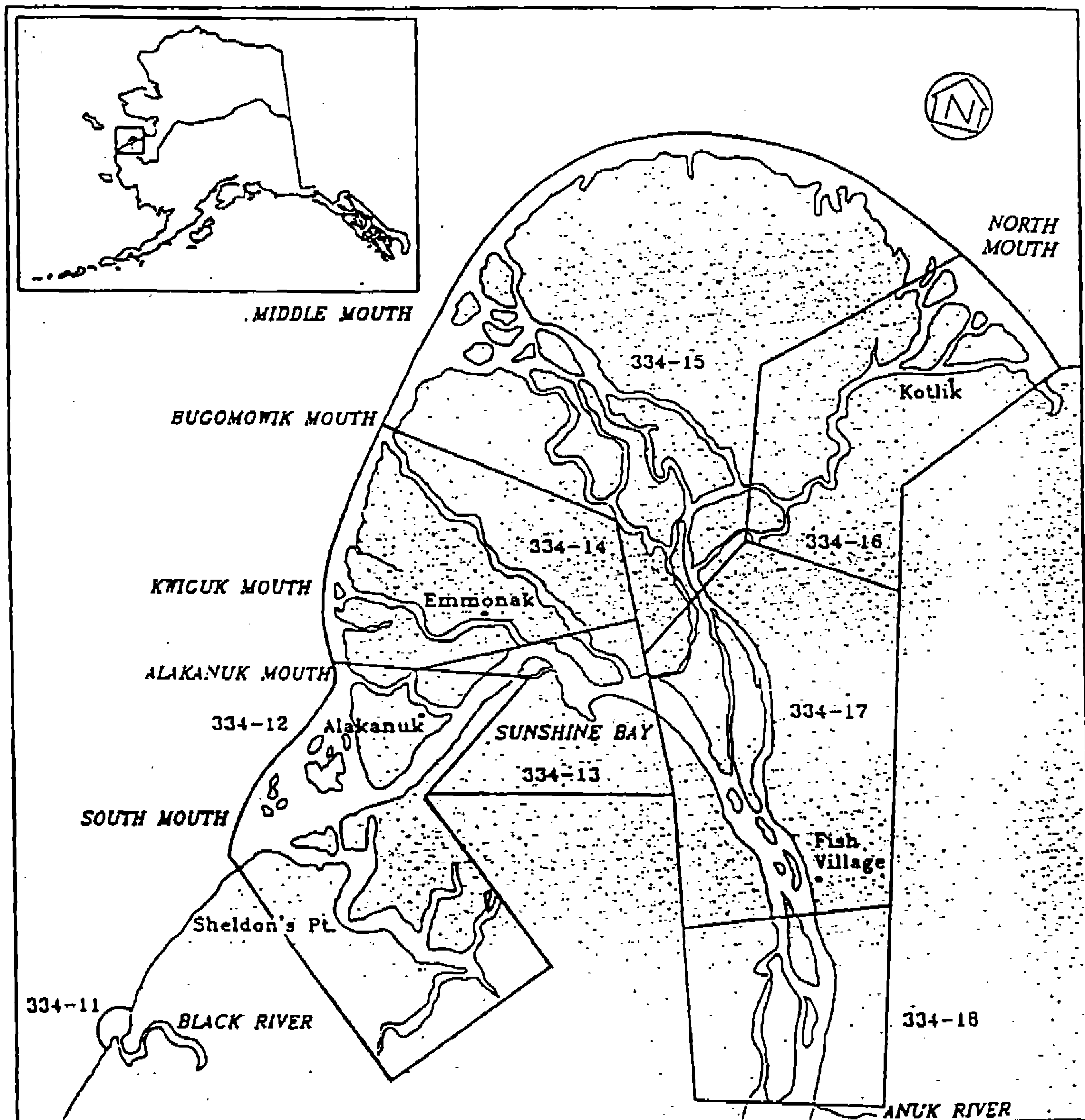


Figure 3. District 1 of Yukon management area with statistical areas.

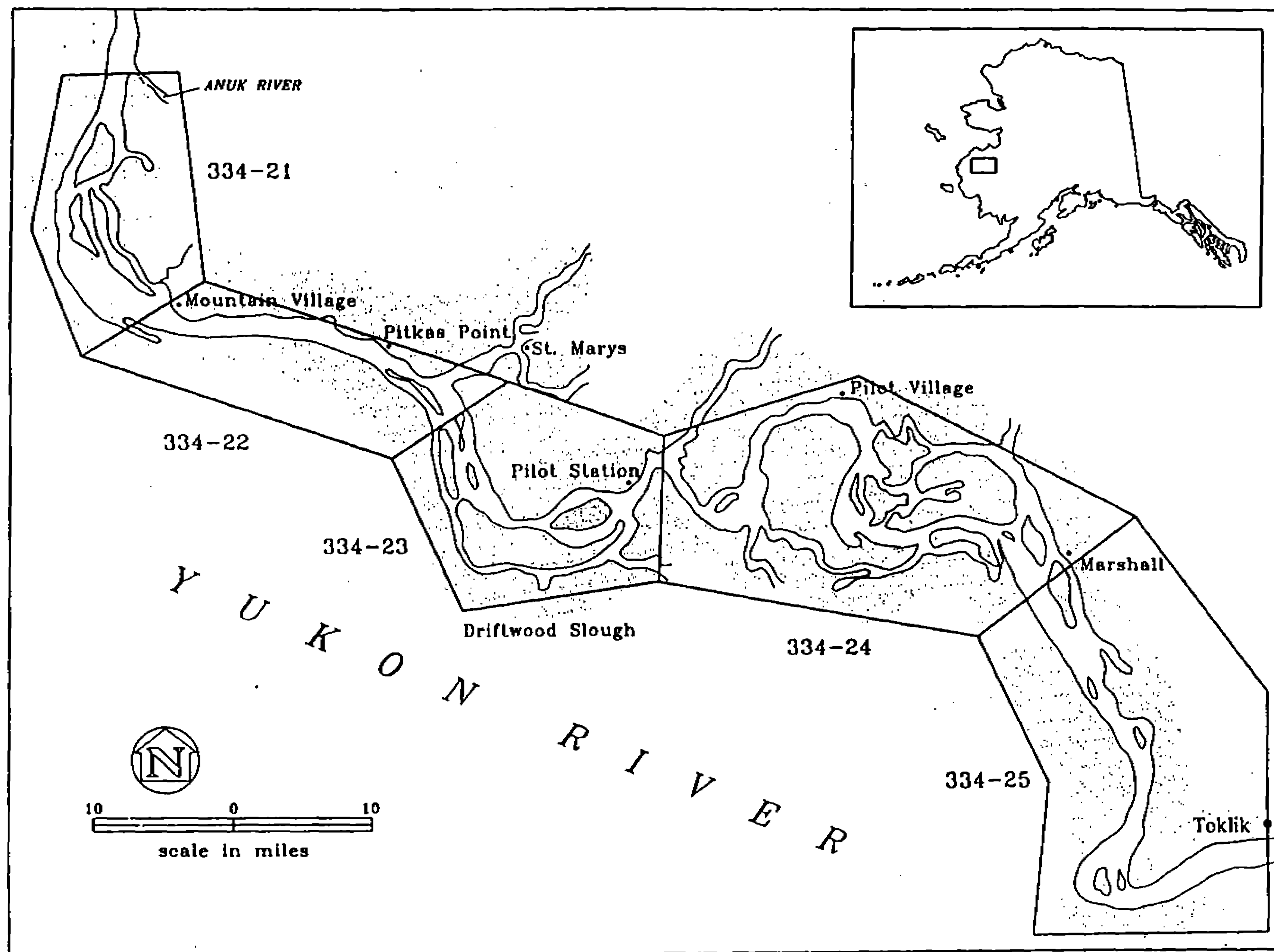


Figure 4. District 2 of Yukon management area with statistical areas.

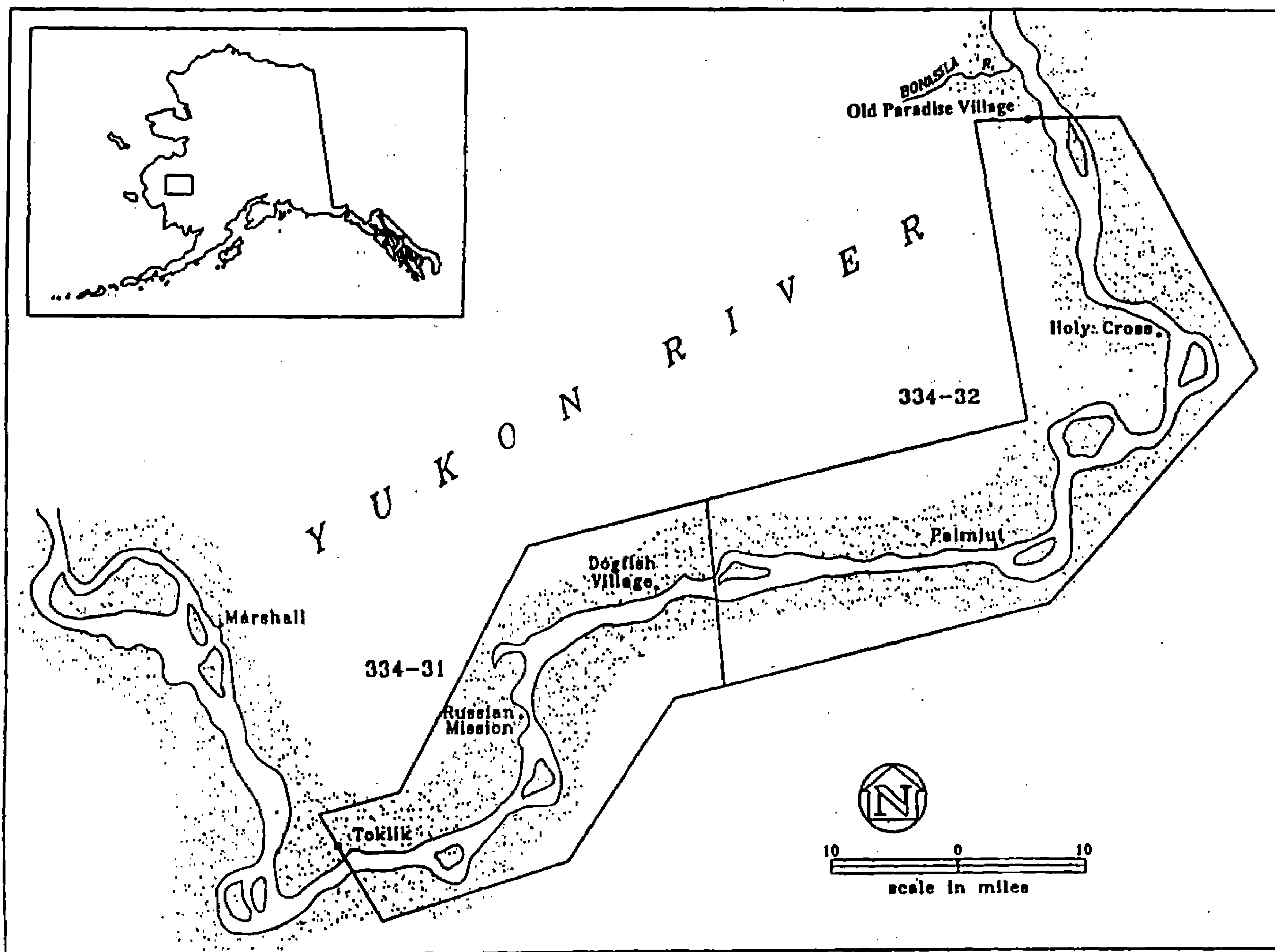


Figure 5. District 3 of Yukon management area with statistical areas.

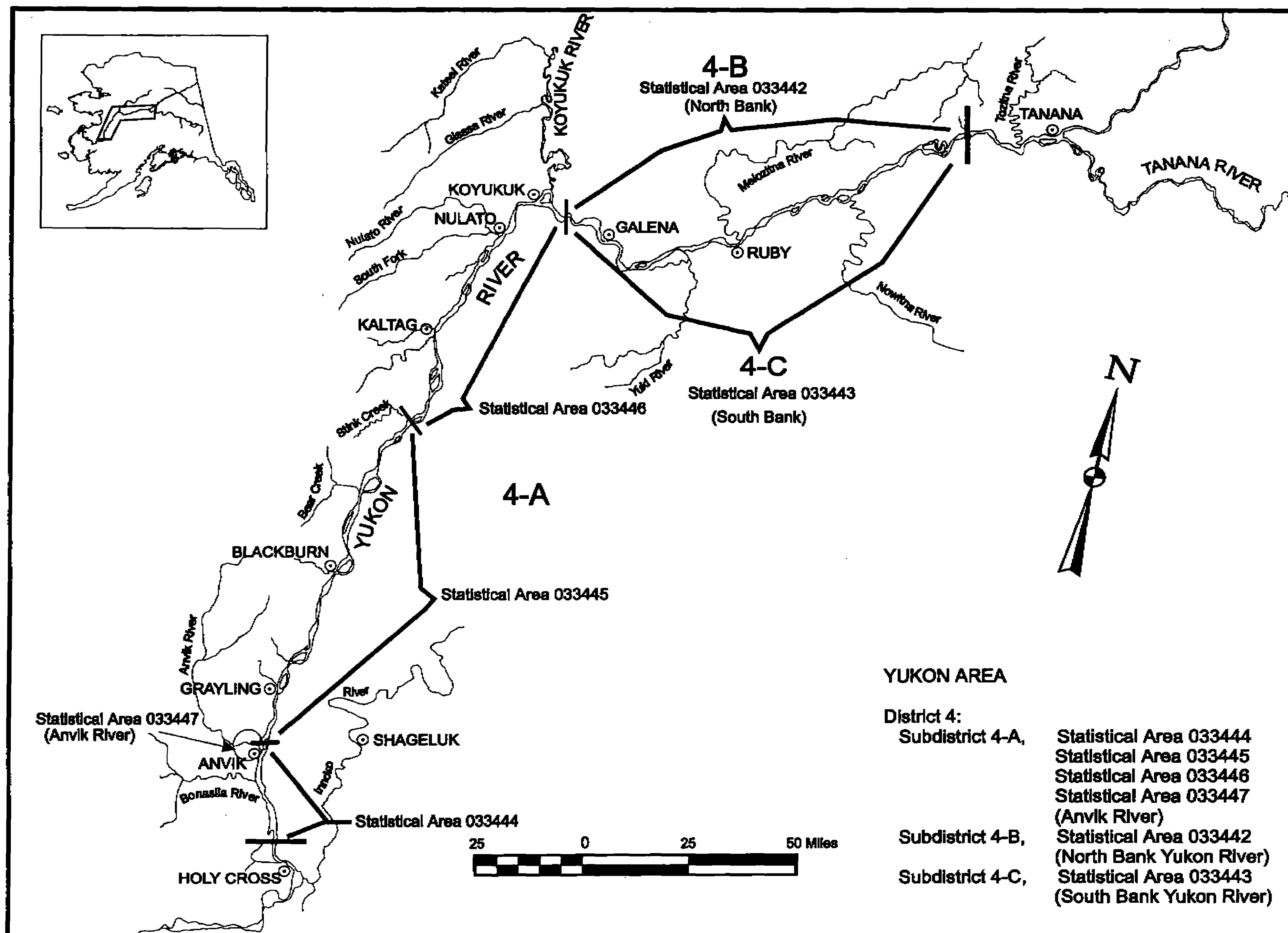
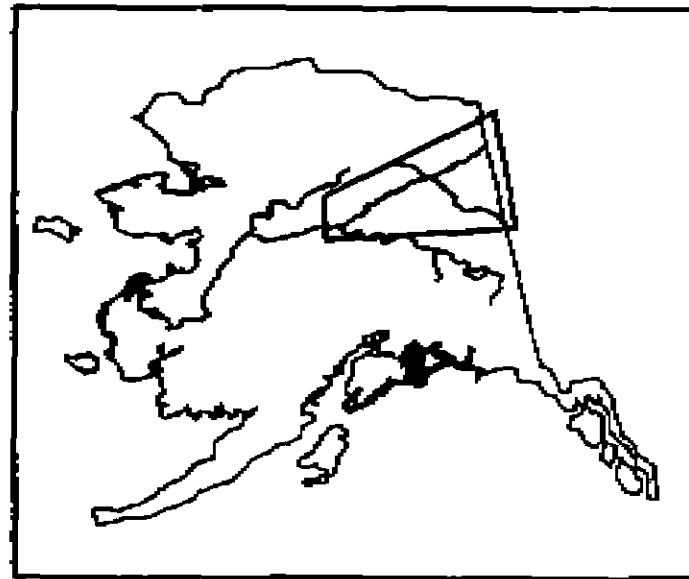


Figure 6. District 4 showing statistical areas, Yukon Area, 1998.



YUKON AREA

DISTRICT 5:

- Subdistrict 5-A, Statistical Area 033451
(South Bank Yukon River)
- Subdistrict 5-B, Statistical Area 033452
- Subdistrict 5-C, Statistical Area 033453
- Subdistrict 5-D, Statistical Area 033454
- Statistical Area 033455

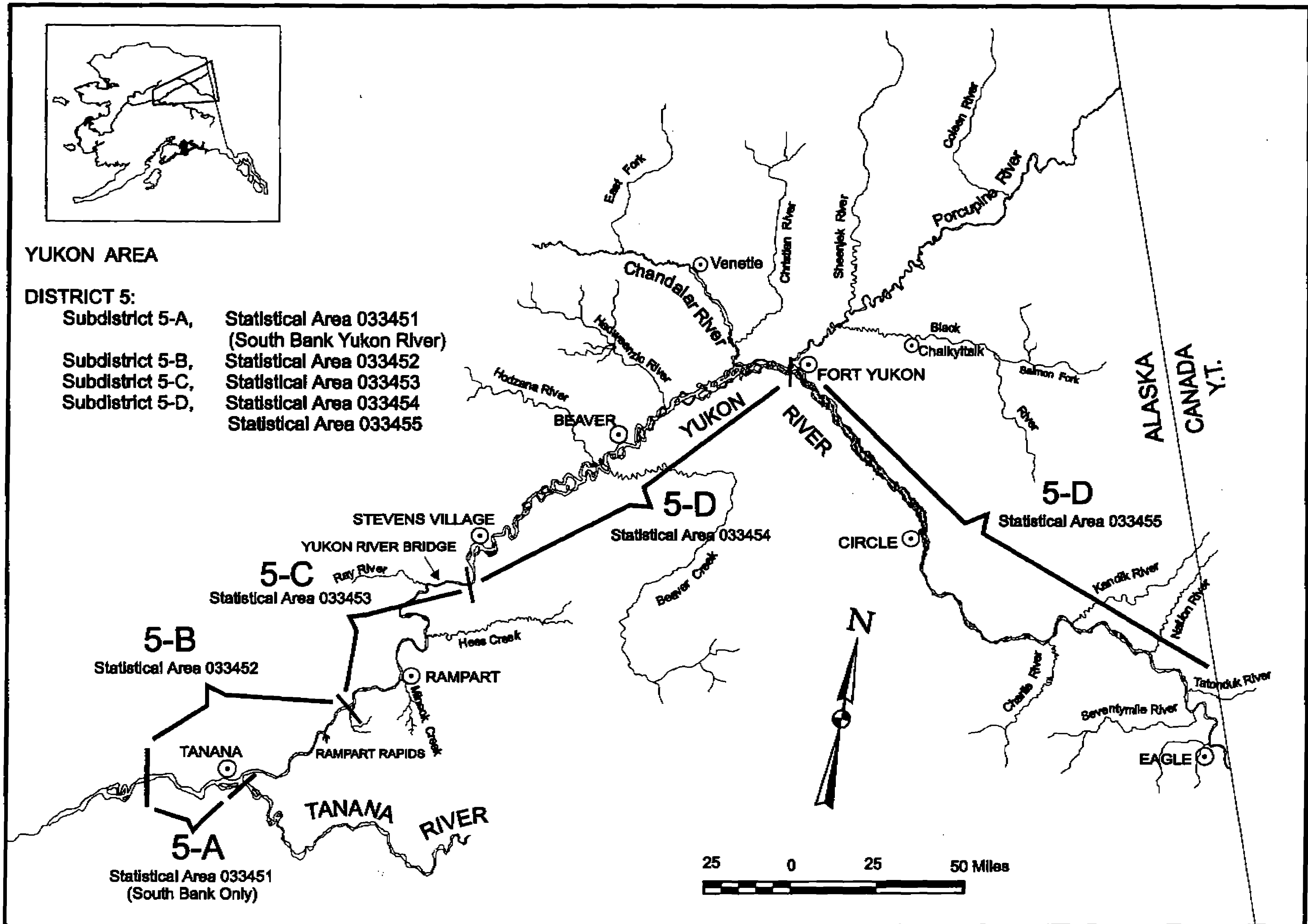


Figure 7. District 5 showing statistical areas, Yukon Area, 1998.

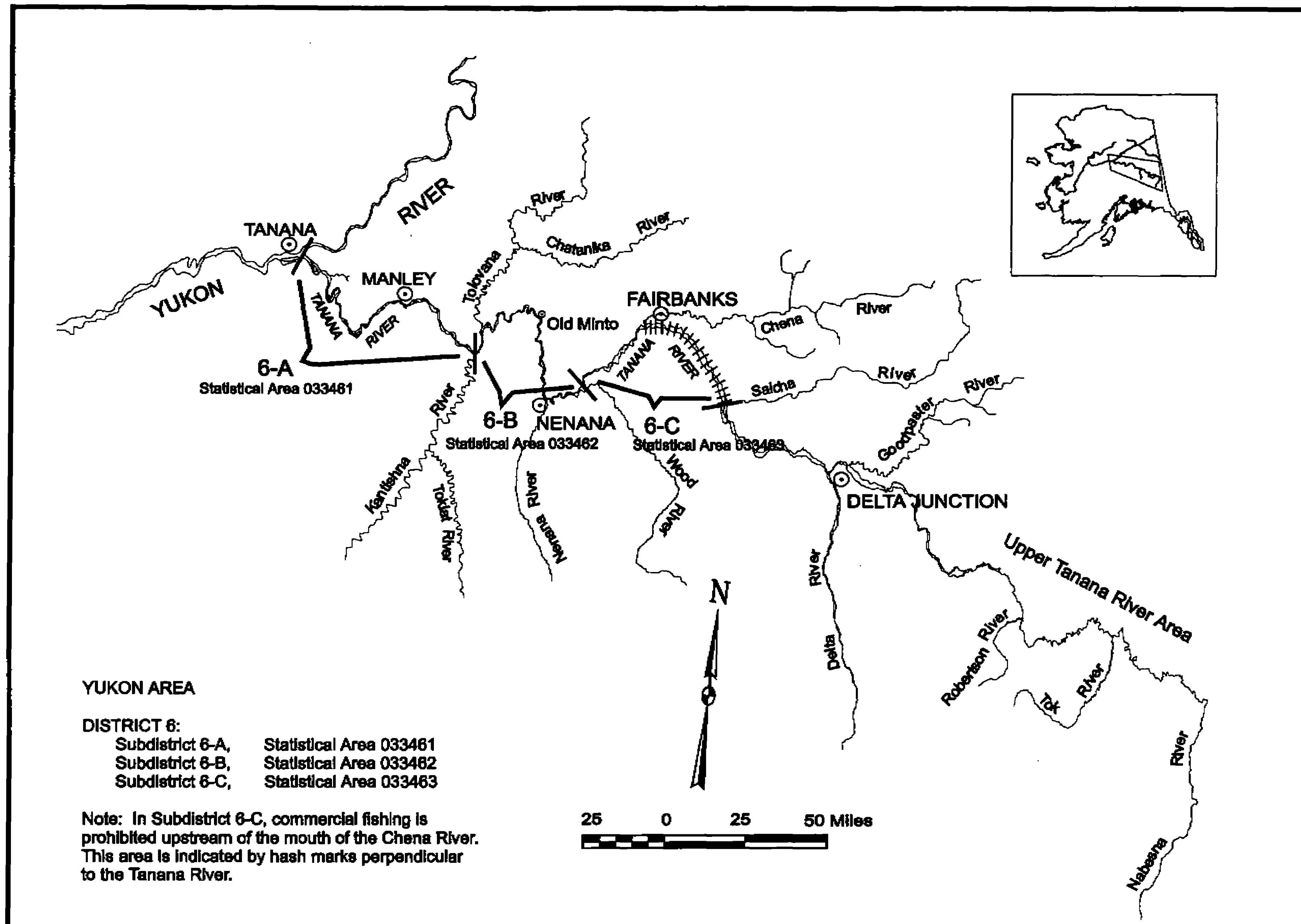


Figure 8. District 6 showing statistical areas, Yukon Area, 1998.

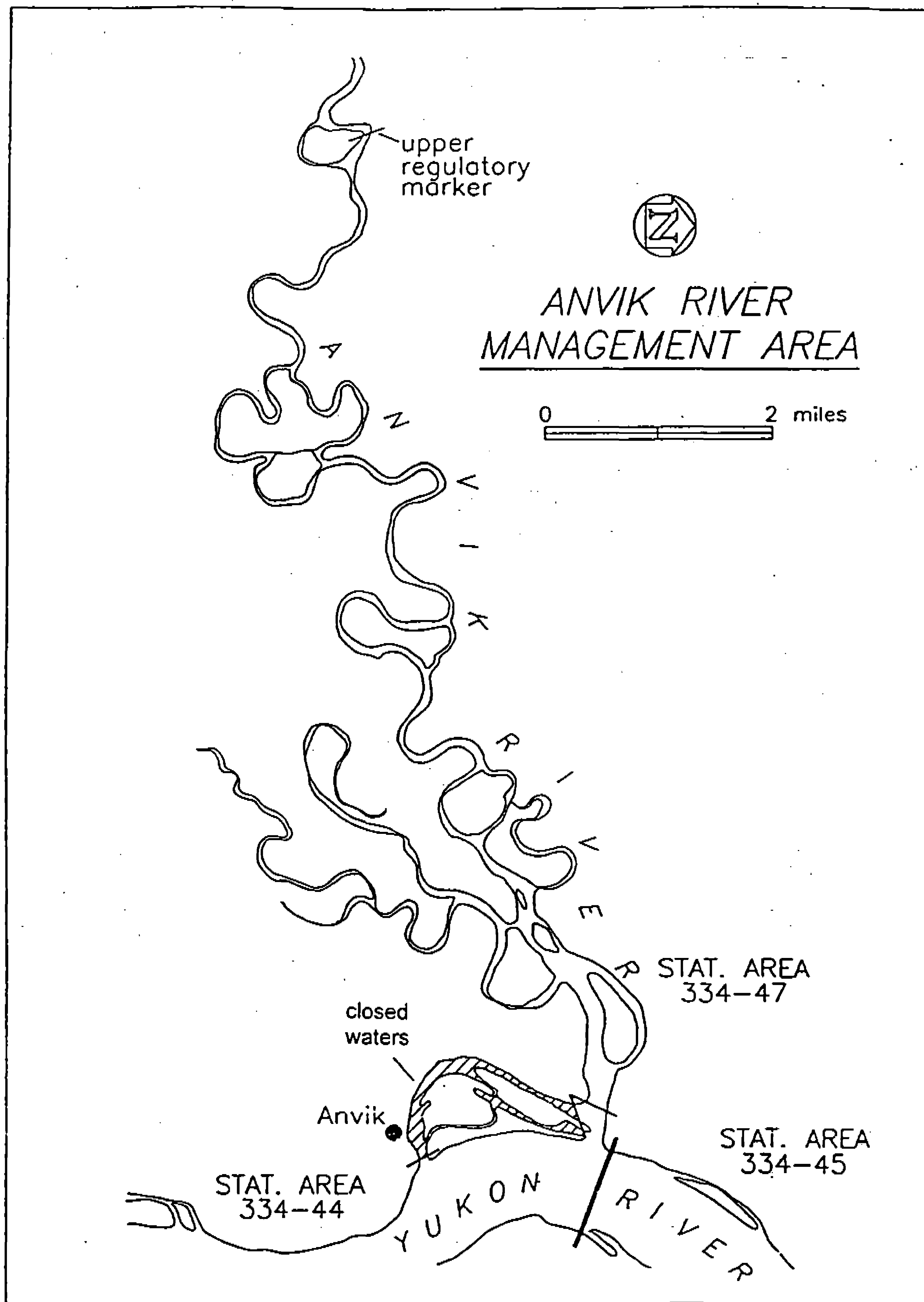


Figure 9. Anvik River Management Area, Yukon Area.

APPENDIX A

YUKON RIVER DRAINAGE SALMON

Appendix A.1. List of indigenous fishes found in the Yukon Area. ^a

Species Code ^b	Scientific Name	Common Name
601	<i>Lampetra japonica</i>	Arctic Lamprey
570	<i>Stenodus leucichthys</i>	Inconnu (Sheefish)
588	<i>Coregonus nasus</i>	Broad Whitefish
589	<i>Coregonus pidschian</i>	Humpback Whitefish
583	<i>Coregonus sardinella</i>	Least Cisco
585	<i>Coregonus laurettae</i>	Bering Cisco
586	<i>Prosopium cylindraceum</i>	Round Whitefish
587	<i>Prosopium coulteri</i>	Pygmy Whitefish
610	<i>Thymallus arcticus</i>	Arctic Grayling
550	<i>Salvelinus namaycush</i>	Lake Trout
520	<i>Salvelinus alpinus</i>	Arctic Char
530	<i>Salvelinus malma</i>	Dolly Varden
410	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon
420	<i>Oncorhynchus nerka</i>	Sockeye Salmon
430	<i>Oncorhynchus kisutch</i>	Coho Salmon
440	<i>Oncorhynchus gorbuscha</i>	Pink Salmon
450	<i>Oncorhynchus keta</i>	Chum Salmon
513	<i>Osmerus mordax</i>	Rainbow Smelt
514	<i>Hypomesus olidus</i>	Pond Smelt
500	<i>Esox lucius</i>	Northern Pike
630	<i>Dallia pectoralis</i>	Alaska Blackfish
650	<i>Couesius plumbeus</i>	Lake Chub
640	<i>Catostomus catostomus</i>	Longnose Sucker
670	<i>Percopsis omiscomaycus</i>	Trout Perch
590	<i>Lota lota</i>	Burbot (lush)
661	<i>Pungitius pungitius</i>	Ninespine Stickleback
162	<i>Cottus cognatus</i>	Slimy Sculpin
ESTUARINE		
113	<i>Eleginus gracilis</i>	Saffron Cod
122	<i>Liopsetta glacialis</i>	Arctic Flounder
127	<i>Limanda aspera</i>	Yellowfin Sole
129	<i>Platichthys stellatus</i>	Starry Flounder
192	<i>Hexagrammos stelleri</i>	Whitespotted Greenling
230	<i>Clupea harengus pallas</i>	Pacific Herring
516	<i>Mallotus villosus</i>	Capelin
NA	<i>Megalocottus platycephalus</i>	Sculpin

^a Includes fishes found in the Yukon River drainage in Canada.

^b The species code is a three-digit number that identifies the type of fish caught on harvest fish tickets.

Appendix A.2. Yukon River drainage mileages.

<u>Location</u>	<u>Mileage from Mouth</u>	<u>Location</u>	<u>Mileage from Mouth</u>
NORTH MOUTH (APOON PASS)		(District 3/4 Boundary)	
Kotlik	6	Mouth, Bonasila River	306
Hamilton	26	Anvik	317
MIDDLE MOUTH (KWIKPAK, KAWANAK PASS)		Mouth, Anvik River	318
Choolunawick	16	Grayling	336
Akers Camp	26	Mouth, Thompson Creek	349
New Hamilton	34	Blackburn	370
SOUTH MOUTH (KWIKLUAK PASS)		Eagle Slide	402
Mouth, Black River	-18	Mouth, Rodo River	447
Flat Island	0	Kaltag	450
Sheldon Point	5	Mouth, Nulato River	483
Tin Can Point	8	Nulato	484
Alakanuk	17	Koyukuk	502
Emmonak-Kwiguk (Kwiguk Pass)	24	Mouth, Koyukuk River	508
Sunshine Bay	24	Mouth, Gisasa River	564
Aproka Pass (upstream mouth)	35	Huslia	711
Kwipak Pass (upstream mouth)	44	Mouth, Dakli River	755
Head of Passes	48	Mouth, Hogatza River	780
Fish Village	52	Hughes	881
Mouth, Anuk River	63	Mouth, Kanuti River	935
(District 1/2 Boundary)		Alatna (Mouth, Alatna R.)	956
Patsys Cabin	71	Allakaket	956
Mountain Village	87	Mouth, South Fork	986
Old Andreafsky	97	Mouth, John River	1,117
Pitkas Point	103	Bettles	1,121
Mouth, Andreafsky River	104	Middle Fork	1,141
St. Marys	107	Cold Foot	1,174
Pilot Station	122	Wiseman	1,186
Mouth, Atcheulinguk (Chulinak) River	126	Bishop Rock	514
Pilot Village	138	Prospect Point	519
Marshall (Fortuna Ledge)	161	Galena	530
Upstream Mouth Owl Slough	163	Whiskey Creek	555
Ingrihak	170	Mouth, Yuki River	562
Ohogamuit	185	Ruby	581
Toklik	191	Mouth, Melozitna River	583
(District 2/3 Boundary)		Homer Hot Springs	605
Kakamut	193	Kokrines	608
Russian Mission	213	Mouth, Nowitna River	612
Dogfish Village	227	Birches	647
Paimuit	251	Kallands-Mouth of Illinois Creek	664
Mouth, Innoko River (South Slough)	274	(District 4/5 Boundary)	
Shageluk	328	Mouth, Tozitna River	681
Holikachuk	383	Tanana Village	695
Holy Cross	279	Mouth, Tanana River	695
Mouth, Koserefski River	286	(District 5/6 Boundary)	
Old Paradise Village	301	Manley Hot Springs	765
		Mouth, Kantishna River	793
		Mouth, Toklat River	838
		Mouth, Sushana R.	850
		Mouth, Bearpaw River	887
		Outlet, L. Minchumina	959
		Minto	835
		Nenana	860
		Mouth, Nenana River	860

<u>Location</u>	<u>Mileage from Mouth</u>	<u>Location</u>	<u>Mileage from Mouth</u>
Mouth, Wood River	894	Mouth, Tatonduk River	1,186
Rosie Creek Bluffs	912	Mouth, Seventymile River	1,194
Mouth, Chena R.(Fairbanks)	920	Eagle	1,213
Mouth, Salcha River	965		
Benchmark #735 Slough	991	<u>U.S.-Canadian border</u>	<u>1,224</u>
Mouth, Little Delta R.	1,000	Mouth, Fortymile River	1,269
Mouth, Delta Creek	1,014	Dawson	1,319
Mouth, Clear Creek	1,015	Mouth, Klondike River	1,320
(Richardson-Clearwater)		Mouth, Sixty Mile River	1,369
Mouth, Shaw Creek	1,021	Mouth, Stewart River	1,375
Mouth, Delta River	1,031	McQuesten	1,455
(Big Delta)		Stewart Crossing	1,491
Delta Junction	1,041	Mayo	1,520
Mouth, Goodpaster River	1,049	Mouth, Hess River	1,594
Bluff Cabin Slough	1,050	Mouth, White River	1,386
Outlet, Clearwater Lake	1,052	Mouth, Donjek River	1,455
Outlet, Clearwater Crk	1,053	Mouth Kluane River	1,541
(Delta Clearwater)		Outlet Kluane L.	1,587
Mouth, Gerstle River	1,059	Burwash Landing	1,595
Outlet, Healy Lake	1,071	Kluane	1,625
Outlet, Lake George	1,086	Fort Selkirk	1,477
Tanacross	1,128	Mouth, Pelly River	1,478
Outlet, Tetlin Lake	1,188	Pelly Crossing	1,410
Mouth, Nabesna River	1,210	Mouth, MacMillan River	1,442
Northway Junction	1,214	Ross River	1,602
Mouth, Chisana River	1,215	Minto	1,499
Mouth, Sheep Creek	1,297	Mouth Tatchun Creek	1,530
Rampart Rapids	731	Carmacks	1,547
Rampart	763	Mouth, Little Salmon River	1,583
Mouth, Hess Creek	789	Mouth, Big Salmon River	1,621
Mouth, Ray River	817	Mouth, N. Big Salmon R.	1,641
Highway Bridge -	820	Mouth, S. Big Salmon R.	1,657
Pipeline Crossing		Outlet, Big Salmon Lake	1,714
Mouth, Dall River	841	Mouth, Teslin River	1,654
Stevens Village	847	Roaring Bull Rapids	1,707
Mouth, Hodzana River	897	Johnson's Crossing	
Beaver	932	(Outlet, Teslin L.)	1,756
Mouth Hadweenzic River	952	Teslin	1,780
Mouth, Chandalar River		Mouth Nisutlin River	1,788
(Venetie Landing)	982	Mouth, Sidney Creek	1,837
Venetie	1,025	Mouth, Hundred Mi. Creek	1,851
Fort Yukon	1,002	Mouth, McNeil River	1,887
Mouth, Porcupine River	1,002	Outlet, Nisutlin Lake	1,892
Mouth, Black River	1,026	Outlet, Lake Laberge	1,679
Chalkyitsik	1,084	Inlet, Lake Laberge	1,712
Mouth, Salmon Fork R.	1,142	Mouth, Takhini River	1,718
Mouth, Sheenjek River	1,054	Whitehorse	1,745
Mouth, Coleen River	1,157	Outlet, Marsh Lake	1,764
Mouth, Salmon Trout R.	1,193	Mouth, M'Clintock River	1,769
U.S. - Canadian Border	1,219	Outlet, Little Atlin L.	1,788
Old Crow	1,259	Outlet, Atlin Lake	1,812
Fishing Branch R.	1,600	Atlin	1,844
spawning area		Tagish	1,786
Circle	1,061	Outlet, Tagish Lake	1,788
Woodchopper	1,110	Carcross	1,810
Mouth, Charley River	1,124	(Outlet L.Bennett)	
Mouth, Kandik River	1,135	Bennett	1,835
Mouth, Nation River	1,166		

Appendix A.3. Alaskan and Canadian total utilization of Yukon River drainage salmon, 1903-1998.

Year	Alaska ^a			Canada ^b			Total		
	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total
1903						4,666			4,666
1904									
1905									
1906									
1907									
1908						7,000			7,000
1909						9,238			9,238
1910									
1911									
1912									
1913						12,133			12,133
1914						12,573			12,573
1915						10,466			10,466
1916						9,566			9,566
1917									
1918	12,239	1,500,065	1,512,304			7,066	12,239	1,500,065	1,519,370
1919	104,822	738,790	843,612			1,800	104,822	738,790	845,412
1920	78,467	1,015,655	1,094,122			12,000	78,467	1,015,655	1,106,122
1921	69,646	112,098	181,744			10,840	69,646	112,098	192,584
1922	31,825	330,000	361,825			2,420	31,825	330,000	364,245
1923	30,893	435,000	465,893			1,833	30,893	435,000	467,726
1924	27,375	1,130,000	1,157,375			4,560	27,375	1,130,000	1,161,935
1925	15,000	259,000	274,000			3,900	15,000	259,000	277,900
1926	20,500	555,000	575,500			4,373	20,500	555,000	579,873
1927		520,000	520,000			5,366		520,000	525,366
1928		670,000	670,000			5,733		670,000	675,733
1929		537,000	537,000			5,226		537,000	542,226
1930		633,000	633,000			3,660		633,000	636,660
1931	26,693	565,000	591,693			3,473	26,693	565,000	595,166
1932	27,899	1,092,000	1,119,899			4,200	27,899	1,092,000	1,124,099
1933	28,779	603,000	631,779			3,333	28,779	603,000	635,112
1934	23,365	474,000	497,365			2,000	23,365	474,000	499,365
1935	27,665	537,000	564,665			3,466	27,665	537,000	568,131
1936	43,713	560,000	603,713			3,400	43,713	560,000	607,113
1937	12,154	346,000	358,154			3,746	12,154	346,000	361,900
1938	32,971	340,450	373,421			860	32,971	340,450	374,281
1939	28,037	327,650	355,687			720	28,037	327,650	356,407
1940	32,453	1,029,000	1,061,453			1,153	32,453	1,029,000	1,062,606
1941	47,608	438,000	485,608			2,806	47,608	438,000	488,414
1942	22,487	197,000	219,487			713	22,487	197,000	220,200
1943	27,650	200,000	227,650			609	27,650	200,000	228,259
1944	14,232		14,232			986	14,232		15,218
1945	19,727		19,727			1,333	19,727		21,060
1946	22,782		22,782			353	22,782		23,135
1947	54,026		54,026			120	54,026		54,146
1948	33,842		33,842				33,842		33,842
1949	36,379		36,379				36,379		36,379
1950	41,808		41,808				41,808		41,808
1951	56,278		56,278				56,278		56,278
1952	38,637	10,868	49,505				38,637	10,868	49,505
1953	58,859	385,977	444,836				58,859	385,977	444,836
1954	64,545	14,375	78,920				64,545	14,375	78,920
1955	55,925		55,925				55,925		55,925
1956	62,208	10,743	72,951				62,208	10,743	72,951
1957	63,623		63,623				63,623		63,623
1958	75,625	337,500	413,125	11,000	1,500	12,500	86,625	339,000	425,625
1959	78,370		78,370	8,434	3,098	11,532	86,804	3,098	89,902
1960	67,597		67,597	9,653	15,608	25,261	77,250	15,608	92,858

-Continued-

Year	Alaska ^a			Canada ^b			Total		
	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total
1961	141,152	461,597	602,749	13,246	9,076	22,322	154,398	470,673	625,071
1962	105,844	434,663	540,507	13,937	9,436	23,373	119,781	444,099	563,880
1963	141,910	429,396	571,306	10,077	27,696	37,773	151,987	457,092	609,079
1964	109,818	504,420	614,238	7,408	12,187	19,595	117,226	516,607	633,833
1965	134,706	484,587	619,293	5,380	11,789	17,169	140,086	496,376	636,462
1966	104,887	309,502	414,389	4,452	13,192	17,644	109,339	322,694	432,033
1967	146,104	352,397	498,501	5,150	16,961	22,111	151,254	369,358	520,612
1968	118,632	270,818	389,450	5,042	11,633	16,675	123,674	282,451	406,125
1969	105,027	424,399	529,426	2,624	7,776	10,400	107,651	432,175	539,826
1970	93,019	585,760	678,779	4,663	3,711	8,374	97,682	589,471	687,153
1971	136,191	547,448	683,639	6,447	16,911	23,358	142,638	564,359	706,997
1972	113,096	461,617	574,715	5,729	7,532	13,261	118,827	469,149	587,976
1973	99,670	779,158	878,828	4,522	10,135	14,657	104,192	789,293	893,485
1974	118,053	1,229,678	1,347,731	5,631	11,646	17,277	123,684	1,241,324	1,365,008
1975	76,883	1,307,037	1,383,920	6,000	20,600	26,600	82,883	1,327,637	1,410,520
1976	105,582	1,026,908	1,132,490	5,025	5,200	10,225	110,607	1,032,108	1,142,715
1977	114,494	1,090,758	1,205,252	7,527	12,479	20,006	122,021	1,103,237	1,225,258
1978	129,988	1,615,312	1,745,300	5,881	9,566	15,447	135,869	1,624,878	1,760,747
1979	159,232	1,596,133	1,755,365	10,375	22,084	32,459	169,607	1,618,217	1,787,824
1980	197,665	1,730,960	1,928,625	22,846	23,718	46,564	220,511	1,754,678	1,975,189
1981	188,477	2,097,871	2,286,348	18,109	22,781	40,890	206,586	2,120,652	2,327,238
1982	152,808	1,265,457	1,418,265	17,208	16,091	33,299	170,016	1,281,548	1,451,564
1983	198,436	1,678,597	1,877,033	18,952	29,490	48,442	217,388	1,708,087	1,925,475
1984	162,683	1,548,101	1,710,784	16,795	29,767	46,562	179,478	1,577,868	1,757,346
1985	187,327	1,657,984	1,845,311	19,301	41,515	60,816	206,628	1,699,499	1,906,127
1986	146,004	1,758,825	1,904,829	20,364	14,843	35,207	166,368	1,773,668	1,940,036
1987	188,386	1,246,176	1,434,562	17,614	44,786	62,400	206,000	1,290,962	1,496,962
1988	148,421	2,311,214	2,459,635	21,427	33,915	55,342	169,848	2,345,129	2,514,977
1989	157,606	2,281,566	2,439,172	17,944	23,490	41,434	175,550	2,305,056	2,480,606
1990	149,433	1,053,351	1,202,784	19,227	34,302	53,529	167,114	1,059,943	1,256,313
1991	154,651	1,335,111	1,489,762	20,607	35,653	56,260	175,258	1,370,764	1,546,022
1992	168,191	863,575	1,031,766	17,903	21,310	39,213	186,094	884,885	1,070,979
1993	163,078	342,197	505,275	16,611	14,150	30,761	179,689	356,347	536,036
1994	172,315	577,233	749,548	21,218	38,342	59,560	193,533	615,575	809,108
1995	177,663	1,437,837	1,615,500	20,887	46,109	66,996	198,550	1,483,946	1,682,496
1996	138,562	1,121,181	1,259,743	19,612	24,395	44,007	158,174	1,145,576	1,303,750
1997	174,625	544,879	719,504	16,528	15,880	32,408	191,153	560,759	751,912
1998	98,715	198,556	297,271	5,937	8,118	14,055	104,652	206,674	311,326

a Catch in number of salmon. Includes estimated number of salmon harvested for the commercial production of roe.

b Aboriginal, Domestic, Commercial, and sport catches combined.

Appendix A.4. Commercial chinook salmon sales and estimated harvest by area, district, and country, Yukon River drainage, 1961-1998.

Year	Lower Yukon Area ^b				Upper Yukon Area ^a												Total Estimated Harvest ^c	Canada Total	Grand Total
	District 1	District 2	District 3	Subtotal	District 4			District 5			District 6			Subtotal					
					Number	Roe	Estimated Harvest ^c	Number	Roe	Estimated Harvest ^c	Number	Roe	Estimated Harvest ^c	Number	Roe	Estimated Harvest ^c			
1981	84,486	29,028	4,368	117,880	-	-	-	-	-	-	-	-	-	1,804	-	1,804	119,684	3,446	123,110
1982	87,099	22,224	4,887	94,010	-	-	-	-	-	-	-	-	-	724	-	724	94,734	4,037	98,771
1983	85,004	24,221	7,020	116,245	-	-	-	-	-	-	-	-	-	803	-	803	117,048	2,283	119,331
1984	67,555	20,248	4,705	92,508	-	-	-	-	-	-	-	-	-	1,081	-	1,081	93,587	3,208	96,795
1985	89,268	23,763	3,204	116,235	-	-	-	-	-	-	-	-	-	1,863	-	1,863	118,098	2,265	120,363
1986	70,788	16,927	3,812	91,327	-	-	-	-	-	-	-	-	-	1,968	-	1,968	93,315	1,942	95,257
1987	104,350	20,239	3,618	128,207	-	-	-	-	-	-	-	-	-	1,449	-	1,449	129,656	2,187	131,843
1988	79,465	21,392	4,543	105,400	-	-	-	-	-	-	-	-	-	1,128	-	1,128	106,528	2,212	108,738
1989	71,688	14,756	3,595	90,039	-	-	-	-	-	-	-	-	-	988	-	988	91,027	1,640	92,667
1970	56,648	17,141	3,705	77,494	-	-	-	-	-	-	-	-	-	1,851	-	1,851	79,145	2,611	81,756
1971	86,042	19,226	3,490	108,758	-	-	-	-	-	-	-	-	-	1,749	-	1,749	110,507	3,178	113,685
1972	70,052	17,855	3,841	91,748	-	-	-	-	-	-	-	-	-	1,092	-	1,092	92,840	1,769	94,609
1973	56,981	13,859	3,204	74,044	-	-	-	-	-	-	-	-	-	1,309	-	1,309	75,353	2,199	77,552
1974 ^d	71,840	17,948	3,480	93,268	685	-	685	2,663	-	2,663	1,473	-	1,473	4,821	-	4,821	98,089	1,808	99,897
1975	44,585	11,315	4,177	60,077	389	-	389	2,872	-	2,872	500	-	500	3,761	-	3,761	63,838	3,000	66,838
1976	62,410	16,556	4,146	83,114	409	-	409	3,151	-	3,151	1,102	-	1,102	4,662	-	4,662	87,776	3,500	91,276
1977	69,915	16,722	3,965	90,602	985	-	985	4,162	-	4,162	1,008	-	1,008	6,155	-	6,155	96,757	4,720	101,477
1978	59,005	32,924	2,916	94,846	608	-	608	3,079	-	3,079	635	-	635	4,322	-	4,322	99,168	2,975	102,143
1979	75,007	41,498	5,016	121,523	1,989	-	1,989	3,389	-	3,389	772	-	772	6,150	-	6,150	127,673	6,175	133,848
1980	90,382	50,004	5,240	145,626	1,521	-	1,521	4,691	-	4,691	1,947	-	1,947	8,359	-	8,359	153,985	9,500	163,485
1981	99,508	45,781	4,023	149,310	1,347	-	1,347	6,374	-	6,374	987	-	987	8,708	-	8,708	158,018	8,593	166,611
1982	74,450	39,132	2,809	116,191	1,087	-	1,087	5,385	-	5,385	981	-	981	7,453	-	7,453	123,644	8,640	132,284
1983	93,457	43,229	4,106	142,792	801	-	801	3,806	-	3,806	911	-	911	5,118	-	5,118	147,910	13,027	160,937
1984	74,671	36,687	3,039	114,407	951	-	951	3,669	-	3,669	857	-	857	5,497	-	5,497	119,904	9,885	129,789
1985	80,011	48,365	2,586	140,964	684	-	684	3,418	-	3,418	1,142	-	1,142	5,224	-	5,224	146,188	12,573	158,761
1986	53,035	41,849	901	95,785	502	-	502	2,733	-	2,733	950	-	950	4,185	-	4,185	99,970	10,797	110,767
1987	76,643	47,458	2,039	126,140	1,524	-	1,524	3,758	-	3,758	3,338	-	3,338	8,620	-	8,620	134,780	10,884	145,624
1988 ^f	56,120	35,120	1,787	93,007	3,159	-	3,159	3,436	-	3,436	762	-	762	7,357	-	7,357	100,364	13,217	113,581
1989	61,570 ^g	33,166	1,645	96,381	2,790	-	2,790	3,286	-	3,286	1,741	-	1,741	7,817	-	7,817	104,198	9,789	113,987
1990	51,199 ^h	33,081	2,341	86,601	3,536	8	3,538	3,353	47	3,365	1,757	1,676	2,156	6,646	1,731	9,059	95,660	11,324	106,984
1991	58,332	39,280	2,344	97,936	2,446	2,222	3,582	3,610	62	3,826	686	1,545	1,072	6,942	3,829	6,480	108,416	10,906	117,322
1992 ^h	74,212	38,139	1,619	114,170	1,651	2,273	2,394	3,852	7	3,855	572	864	753	6,075	3,164	7,002	121,172	10,877	132,049
1993	49,288	37,293	1,501	88,080	1,349	701	1,577	3,008	0	3,008	1,113	1,313	1,445	5,470	2,014	6,030	94,110	10,350	104,460
1994	62,241	41,692	1,114	105,047	2,216	564	2,443	3,739	10	3,744	2,135	1,820	2,606	8,090	2,394	8,793	113,840	12,028	125,868
1995	76,106	41,458	0	117,564	262	626	499	3,242	0	3,242	1,660	4,731	2,747	5,164	5,357	6,468	124,052	11,146	135,198
1996	58,842	30,209	0	89,051	45	202	137	2,497	518	2,757	278	750	447	2,820	1,470	3,341	90,192	10,164	100,356
1997	88,384	39,363	0	105,747	1,450	14	1,457	3,678	0	3,678	1,866	3,211	2,728	7,094	3,225	7,863	113,610	5,311	118,921
1998	25,413	16,806	0	42,219	0	0	0	517	0	517	882	260	963	1,399	260	1,480	43,699	390	44,089
5 Year Average																			
1988-1992	59,887	35,749	1,963	97,619	2,716	-	3,093	3,547	-	3,554	1,104	-	1,297	7,367	-	7,943	105,562	11,223	116,785
5 Year Average																			
1993-1997	62,132	38,003	520	100,658	1,064	421	1,223	3,233	108	3,288	1,430	2,365	1,995	5,728	2,892	6,503	107,161	9,800	116,961

^a Harvest reported in numbers of fish sold in the round and pounds of roe sold. Since 1990, efforts were made to separate chinook roe from summer chum roe. Does not include department test fish sales.

^b All fish sold in the round. Includes department test fish sales prior to 1988.

^c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

^d In 1974, District 4 was subdivided to include Districts 5 and 6.

^e Includes the illegal sales of 853 chinook salmon in District 5, and 2,136 chinook salmon in District 6.

^f Includes the illegal sales of 3,211 chinook salmon in District 1.

^g Includes the illegal sales of 1,101 chinook salmon in District 1.

^h Includes the illegal sales of 2,711 chinook salmon in District 1, and 284 chinook salmon in District 2.

ⁱ Includes the illegal sales of 1,218 chinook salmon in District 1, and 207 chinook salmon in District 2.

Appendix A.5. Commercial summer chum salmon sales and estimated harvest by area and district,
Yukon River drainage in Alaska, 1967-1998.

Year	Lower Yukon Area						
	District 1 ^b	District 2 ^b	District 3 ^a			Subtotal	
			Number	Roe	Estimated Harvest ^c	Number	Roe
1967	9,453	1,425	57			10,935	-
1968	12,995	1,407	68			14,470	-
1969	56,886	5,080	-			61,966	-
1970	117,357	19,849	-			137,006	-
1971	93,928	6,112	50			100,090	-
1972	114,234	20,907	527			135,668	-
1973	221,644	63,402	463			285,509	-
1974 ^d	466,004	74,152	1,721			541,877	-
1975	418,323	99,139	-			517,462	-
1976	273,204	99,190	9,802			382,196	-
1977	250,652	105,679	3,412			359,743	-
1978	393,785	227,548	27,003			648,336	-
1979	369,934	172,838	40,015			582,787	-
1980	391,252	308,704	44,782			744,738	-
1981	507,158	351,878	54,471			913,507	-
1982	249,516	182,344	4,086			435,946	-
1983	451,164	248,092	14,600			713,856	-
1984	292,676	236,931	1,087			530,694	-
1985	247,486	188,099	1,792			437,377	-
1986	381,127	288,427	442			669,996	-
1987	222,898	174,876	3,501			401,275	-
1988	645,322	424,461	13,965			1,083,748	-
1989	544,373 ^f	343,032	7,578			894,983	-
1990	146,725	131,755	643			279,123	-
1991	140,470 ^h	175,149	8,912			324,531	-
1992 ⁱ	177,329	147,129	65			324,523	-
1993	73,659	19,332	463			93,454	-
1994	42,332	12,869	35			55,236	-
1995	142,266	83,817	0			226,083	-
1996	92,506	30,727	0	935	1,534	123,233	935
1997	59,915	18,242	0	0	0	78,157	0
1998	21,270	6,848	0	0	0	28,118	0
5 Year Average							
1988-1992	330,844	244,305	6,233	-	-	581,382	-
5 Year Average							
1993-1997	82,136	32,997	100	-	-	115,233	-

-Continued-

Upper Yukon Area ^a															
Year	District 4			District 5			District 6			Subtotal			Total		
	Number	Roe	Estimated Harvest ^c	Number	Roe	Estimated Harvest ^c	Number	Roe	Estimated Harvest ^c	Number	Roe	Estimated Harvest ^c	Number	Roe	Estimated Harvest ^c
1967	-	-	-	-	-	-	-	-	-	0	0	0	10,935	0	10,935
1968	-	-	-	-	-	-	-	-	-	0	0	0	14,470	0	14,470
1969	-	-	-	-	-	-	-	-	-	0	0	0	61,968	0	61,968
1970	-	-	-	-	-	-	-	-	-	0	0	0	137,008	0	137,008
1971	-	-	-	-	-	-	-	-	-	0	0	0	100,090	0	100,090
1972	-	-	-	-	-	-	-	-	-	0	0	0	135,888	0	135,888
1973	-	-	-	-	-	-	-	-	-	0	0	0	285,509	0	285,509
1974 ^d	27,686	-	27,686	8,831	-	8,831	13,318	-	13,318	48,015	0	48,015	589,892	0	589,892
1975	185,054	-	185,054	12,997	-	12,997	14,782	-	14,782	192,833	0	192,833	710,295	0	710,295
1976	211,307	-	211,307	774	-	774	8,617	-	8,617	218,698	0	218,698	600,894	0	600,894
1977	189,541	-	189,541	1,274	-	1,274	4,317	-	4,317	175,132	0	175,132	534,875	0	534,875
1978	364,164	18,920	361,104	4,892	605	5,497	34,814	8,236	43,050	403,890	25,761	429,651	1,052,226	25,761	1,077,987
1979	169,430	35,317	204,747	8,808	1,009	9,817	18,491	3,891	22,382	198,529	40,217	238,746	779,316	40,217	819,533
1980	147,560	135,824	283,384	456	-	456	35,855	3,262	39,137	183,871	139,106	322,977	928,609	139,106	1,067,715
1981	59,718	187,032	330,445	1,238	49	1,285	32,477	1,967	34,464	93,431	189,088	368,194	1,008,938	189,088	1,279,701
1982	3,847	151,281	257,719	213	21	234	21,597	1,517	23,114	25,457	152,819	281,067	461,403	152,819	717,013
1983	8,672	148,125	255,388	42	1,858	1,898	24,309	18	24,327	31,023	149,999	281,613	744,879	149,999	995,469
1984	1,009	166,842	278,070	645	47	692	58,249	335	58,584	57,903	167,224	335,348	588,597	167,224	666,040
1985	12,007	247,085	427,483	700	-	700	68,913	1,540	68,453	79,820	248,625	496,636	518,997	248,625	934,013
1986	300	269,545	465,535	890	-	890	50,483	2,146	52,629	51,473	271,691	518,854	721,469	271,691	1,188,850
1987	28,991	121,474	209,800	382	44	408	10,610	450	11,080	40,963	121,988	221,286	442,238	121,988	622,541
1988	24,051	254,526	490,074	722	363	1,085	40,128	1,646	41,775	64,902	256,535	532,934	1,148,850	256,535	1,616,682
1989	18,554	283,305	510,244	154	373	527	42,115	4,871	48,986	60,823	288,549	657,757	955,808	288,549	1,452,740
1990	12,364	105,723	222,550	11	594	671	11,127 ^g	3,059	14,833	23,502	109,376	238,054	302,625	109,376	517,177
1991	6,381	137,232	309,644	4	28	35	18,197	4,716	23,892	24,582	141,976	333,571	349,113	141,976	658,102
1992 ^j	2,659	110,809	211,398	102	295	430	5,029	1,892	7,228	7,790	112,998	219,054	332,313	112,998	543,577
1993	27	22,447	42,957	0	0	0	3,041	515	3,705	3,068	22,962	46,662	98,522	22,962	140,118
1994	3,811	89,717	171,807	229	212	464	21,208	7,828	31,434	25,048	97,757	203,505	80,284	97,757	258,741
1995	8,873	281,074	554,587	107	188	316	24,711	9,475	37,428	33,691	290,737	592,331	259,774	290,737	618,414
1996	0	295,190	510,240	0	302	336	22,380	18,332	46,890	22,380	313,824	557,466	145,593	314,759	682,233
1997	2,062	74,231	124,871	137	0	137	14,866	9,036	25,287	17,065	83,287	150,095	95,242	83,287	228,252
1998	0	0	0	98	13	110	397	140	570	493	153	660	28,811	153	28,798
5 Year Average															
1988-1992	12,802	176,319	348,782	199	331	550	23,319	3,237	26,943	36,320	181,886	376,274	617,701	181,886	957,656
5 Year Average															
1993-1997	2,915	152,532	280,812	95	140	251	17,241	9,037	28,949	20,250	161,709	310,012	135,483	161,898	425,551

^a Harvest reported in numbers of fish sold in the round and pounds of roe. Roe sales may include some pink and chinook salmon roe. Does not include department test fish sales.

^b All sales are fish in the round in District 1 and 2. Includes department test fish sales prior to 1988.

^c The estimated harvest is the fish sold in the round plus the estimated number of females caught to produce the roe sold. In addition, the estimated harvest for Districts 3 and 4 includes the estimated number of unsold males harvested.

^d In 1974, District 4 was subdivided to include Districts 5 and 6.

^f Includes the illegal sales of 150 summer chum salmon in District 1.

^g Does not include 1,233 female summer chum salmon sold in Subdistrict 6-C with roe extracted and roe sold separately. These fish are included in estimated harvest to produce roe sold.

^h Includes the illegal sales of 1,023 summer chum salmon.

^j Includes the illegal sales of 31 summer chum salmon in District 1, and 91 summer chum salmon in District 2.

Appendix A.8. Commercial fall chum salmon sales and estimated harvest by area, district, and country, Yukon River drainage, 1961-1998.

Year	Lower Yukon Area ^b				Upper Yukon Area ^a												Canada Total	Grand Total	
	District 1	District 2	District 3	Subtotal	District 4			District 5			District 6			Subtotal					Total Estimated Harvest
					Numbers	Roe	Estimated Harvest ^c	Numbers	Roe	Estimated Harvest ^c	Numbers	Roe	Estimated Harvest ^c	Numbers	Roe	Estimated Harvest ^c			
1961	42,461	-	-	42,461	-	-	-	-	-	-	-	-	-	0	0	0	42,461	3,276	45,737
1962	53,116	-	-	53,116	-	-	-	-	-	-	-	-	-	0	0	0	53,116	936	54,052
1963	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	2,196	2,196
1964	8,347	-	-	8,347	-	-	-	-	-	-	-	-	-	0	0	0	8,347	1,929	10,276
1965	22,936	-	-	22,936	-	-	-	-	-	-	-	-	-	381	0	381	23,317	2,071	25,388
1966	69,836	-	1,209	71,045	-	-	-	-	-	-	-	-	-	0	0	0	71,045	3,157	74,202
1967	38,451	-	1,823	38,274	-	-	-	-	-	-	-	-	-	0	0	0	38,274	3,343	41,617
1968	49,857	-	3,068	52,925	-	-	-	-	-	-	-	-	-	0	0	0	52,925	453	53,378
1969	128,866	-	1,722	130,588	-	-	-	-	-	-	-	-	-	722	0	722	131,310	2,279	133,589
1970	200,308	4,859	3,265	208,449	-	-	-	-	-	-	-	-	-	1,146	0	1,146	209,595	2,479	212,074
1971	188,533	-	-	188,533	-	-	-	-	-	-	-	-	-	1,061	0	1,061	189,594	1,761	191,355
1972	136,711	12,898	1,313	150,922	-	-	-	-	-	-	-	-	-	1,254	0	1,254	152,176	2,532	154,708
1973	173,783	45,304	-	219,087	-	-	-	-	-	-	-	-	-	13,003	0	13,003	232,090	2,808	234,896
1974	176,036	53,540	552	230,128	9,213	-	9,213	23,551	-	23,551	26,884	-	26,884	59,648	0	59,648	289,776	2,544	292,320
1975	158,183	51,666	5,590	215,439	13,666	-	13,666	27,212	-	27,212	18,692	-	18,692	59,570	0	59,570	275,009	2,500	277,509
1976	105,851	21,212	4,250	131,313	1,742	-	1,742	5,367	-	5,367	17,948	-	17,948	25,077	0	25,077	156,390	1,000	157,390
1977	131,756	51,994	15,851	199,603	13,980	-	13,980	25,730	-	25,730	18,673	-	18,673	58,383	0	58,383	257,966	3,990	261,976
1978	127,947	51,646	11,527	191,120	10,988	1,721	12,709	21,016	5,220	26,236	13,259	3,667	16,946	45,283	10,628	55,691	247,011	3,356	250,367
1979	109,406	94,042	25,955	229,403	48,899	3,199	52,098	47,459	8,097	55,556	34,185	7,170	41,355	130,543	18,466	149,009	378,412	9,084	387,496
1980	106,629	83,881	13,519	204,229	27,976	4,347	32,325	41,771	605	42,376	19,452	68	19,520	89,201	5,020	94,221	298,450	9,000	307,450
1981	167,834	154,883	19,043	341,760	12,082	1,311	13,393	86,620	6,955	93,575	25,969	3,019	29,008	124,691	11,285	135,976	477,736	15,260	492,996
1982	97,484	98,581	5,815	199,880	3,694	167	4,061	13,593	42	13,635	6,820	596	7,416	24,307	805	25,112	224,992	11,312	236,304
1983	124,371	85,645	10,016	220,034	4,482	1,963	6,445	43,993	0	43,993	34,089	3,101	37,190	82,564	5,064	87,628	307,662	25,990	333,652
1984	78,751	70,803	6,429	155,983	7,625	2,215	9,840	24,060	57	24,117	20,564	56	20,620	52,249	2,328	54,577	210,660	22,932	233,492
1985	129,948	40,490	5,164	175,602	24,452	2,525	26,977	25,336	0	25,336	42,352	0	42,352	92,142	2,525	94,667	270,269	35,746	306,015
1986	69,352	51,307	2,793	113,452	2,045	0	2,045	22,053	395	22,448	1,892	182	2,074	25,990	577	26,567	140,019	11,464	151,483
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40,591	40,591
1988	44,890	31,845	2,090	78,825	15,662	1,421	17,083	16,989	0	16,989	21,844	1,808	23,650	54,495	3,227	57,722	136,547	30,263	166,810
1989	74,235	97,556	15,332	167,125	11,776	3,407	15,183	18,215	3,989	22,204	49,090	7,353	56,443	79,081	14,749	93,830	280,955	17,549	298,504
1990	25,269	37,077	3,715	66,061	4,989	2,351	8,166	7,778	1,058	8,976	43,182	7,535	50,975	55,949	10,944	66,117	134,178	27,537	161,715
1991	59,724	102,828	9,213	171,565	3,737	1,616	6,091	27,355	3,625	32,114	28,195	14,154	44,448	59,287	19,395	82,653	254,218	31,404	285,622
1992	0	0	0	0	0	0	0	0	0	0	15,721	2,806	19,022	15,721	2,806	19,022	19,022	18,576	37,598
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,762	7,762
1994	0	0	0	0	0	0	0	3,630	0	3,630	1	3,276	4,369	3,631	3,276	7,999	7,999	30,035	38,034
1995	79,345	80,831	0	170,176	2,924	4,126	8,731	9,778	16,815	30,033	87,655	9,560	74,117	80,557	32,501	112,861	283,057	39,012	322,069
1996	33,629	29,851	0	63,280	2,918	0	2,918	11,878	8,498	21,858	10,266	6,173	17,574	25,062	14,671	42,350	105,830	20,069	125,699
1997	27,483	24,326	0	51,809	2,458	0	2,458	2,448	1,194	3,920	0	0	0	4,904	1,194	6,378	58,187	8,088	66,255
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Year Average																			
1986-1992	40,824	53,622	6,070	100,715	7,233	1,759	9,305	14,067	1,734	16,057	31,808	6,731	36,908	52,907	10,224	64,269	164,984	25,066	190,050
5 Year Average																			
1993-1997	28,091	28,962	0	57,053	1,660	825	2,821	5,546	5,701	11,886	15,624	3,802	19,212	22,831	10,328	33,922	90,975	20,969	111,964

^a Sales reported in numbers of fish sold in the round and pounds of unprocessed roe, which may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho roe from fall chum roe. Does not include department test fish sales.

^b All fish sold in the round. Includes department test fish sales prior to 1988.

^c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

^d In 1974, District 4 was subdivided to include Districts 5 and 6.

^f Does not include 884 female fall chum salmon sold in Subdistrict 6-C with roe extracted and roe sold separately. Females are accounted for in the estimated harvest to produce roe sold.

Appendix A.7. Commercial coho salmon sales and estimated harvest by area and district, Yukon River drainage in Alaska, 1961-1998.

Year	Lower Yukon Area ^b				Upper Yukon Area ^a										Total Estimated Harvest		
	District 1	District 2	District 3	Subtotal	District 4			District 5			District 6			Subtotal			
					Number	Estimated Roe	Harvest ^c	Number	Estimated Roe	Harvest ^c	Number	Estimated Roe	Harvest ^c	Number		Estimated Roe	Harvest ^c
1961	2,855	-	-	2,855	-	-	-	-	-	-	-	-	-	-	-	2,855	
1962	22,926	-	-	22,926	-	-	-	-	-	-	-	-	-	-	-	22,926	
1963	5,572	-	-	5,572	-	-	-	-	-	-	-	-	-	-	-	5,572	
1964	2,446	-	-	2,446	-	-	-	-	-	-	-	-	-	-	-	2,446	
1965	350	-	-	350	-	-	-	-	-	-	-	-	-	-	-	350	
1966	19,254	-	-	19,254	-	-	-	-	-	-	-	-	-	-	-	19,254	
1967	9,925	-	1,122	11,047	-	-	-	-	-	-	-	-	-	-	-	11,047	
1968	13,153	-	150	13,303	-	-	-	-	-	-	-	-	-	-	-	13,303	
1969	13,889	-	1,009	14,898	-	-	-	-	-	-	-	-	-	-	95	15,093	
1970	12,632	-	-	12,632	-	-	-	-	-	-	-	-	-	-	556	13,188	
1971	12,165	-	-	12,165	-	-	-	-	-	-	-	-	-	-	38	12,203	
1972	21,705	506	-	22,211	-	-	-	-	-	-	-	-	-	-	22	22,233	
1973	34,860	1,781	-	36,641	-	-	-	-	-	-	-	-	-	-	0	36,641	
1974 ^d	13,713	176	-	13,889	0	-	0	1,409	-	1,409	1,479	-	1,479	2,888	-	2,888	
1975	2,288	200	-	2,488	0	-	0	5	-	5	53	-	53	58	-	58	
1976	4,064	17	-	4,081	0	-	0	0	-	0	1,103	-	1,103	1,103	-	1,103	
1977	31,720	5,319	538	37,577	0	-	0	2	-	2	1,284	-	1,284	1,286	-	1,286	
1978	16,460	5,835	758	23,053	32	-	32	1	-	1	3,066	-	3,066	3,099	-	3,099	
1979	11,369	2,850	-	14,219	155	-	155	0	-	0	2,791	-	2,791	2,946	-	2,946	
1980	4,829	2,660	-	7,489	30	-	30	0	-	0	1,226	-	1,226	1,256	-	1,256	
1981	13,129	7,848	419	21,396	0	-	0	0	-	0	2,284	-	2,284	2,284	-	2,284	
1982	15,115	14,179	87	29,381	15	-	15	0	-	0	7,780	-	7,780	7,795	-	7,795	
1983	4,595	2,557	-	7,152	0	-	0	0	-	0	6,168	-	6,168	6,168	-	6,168	
1984	29,472	43,064	621	73,157	1,095	-	1,095	0	-	0	7,688	-	7,688	8,783	-	8,783	
1985	27,676	17,125	171	44,972	938	-	938	0	-	0	11,762	-	11,762	12,700	-	12,700	
1986	24,824	21,197	793	46,814	0	-	0	0	-	0	441	-	441	441	-	441	
1987	0	0	0	0	0	-	0	0	-	0	0	-	0	0	-	0	
1988	36,028	34,758	1,419	72,205	2	-	2	8	-	8	13,972	-	13,972	13,982	-	13,982	
1989	22,987	38,402	3,988	65,377	3	-	3	84	-	84	16,084	-	16,084	16,171	-	16,171	
1990	12,180	16,405	918	29,483	0	-	0	0	-	0	11,549 ^f	4,042	14,804	11,549	4,042	14,804	
1991	54,095	40,898	1,905	96,898	14	0	14	0	0	0	6,268	4,299	9,774	6,262	4,299	9,788	
1992	0	0	0	0	0	0	0	0	0	0	6,556	1,680	7,979	6,556	1,680	7,979	
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1994	0	0	0	0	0	0	0	0	0	0	120	5,588	4,451	120	5,588	4,451	
1995	21,625	16,488	0	40,113	0	0	0	0	0	0	5,826	2,229	6,900	5,826	2,229	6,900	
1996	27,705	20,974	0	48,679	161	0	161	0	0	0	3,803	4,829	7,142	3,964	4,829	7,303	
1997	21,450	13,056	0	34,506	814	0	814	0	0	0	0	0	0	814	0	814	
1998	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
5 Year Average																	
1988-1992	25,054	26,093	1,646	52,793	4	-	4	18	-	18	10,886	-	12,523	10,908	-	12,545	
5 Year Average																	
1993-1997	14,156	10,504	0	24,660	195	0	195	0	0	0	1,950	2,529	3,699	2,145	2,529	3,894	

a Sales reported in numbers of fish sold in the round and pounds of roe. Since 1990, efforts were made to separate coho and fall chum salmon roe. Does not include department test fish sales.

b All sales are fish in the round. Includes department test fish sales prior to 1988.

c The estimated harvest is the fish sold in the round plus the estimated number of females caught to produce the roe sold.

d In 1974, District 4 was subdivided to include Districts 5 and 6.

f Does not include 438 female coho salmon sold in District 6-C with roe extracted and roe sold separately. These fish are included in estimated harvest to produce roe sold.

**Appendix A.8. Commercial Fisheries Entry Commission (CFEC) salmon permits issued by gear type,
Yukon Area, 1976-1998. ^a**

Year	Lower Yukon Area Set or Drift Gillnet		Upper Yukon Area Set Gillnet		Upper Yukon Area Fishwheel		Total	
	Permits Issued	Permits Fished	Permits Issued	Permits Fished	Permits Issued	Permits Fished	Permits Issued	Permits Fished
1976	678	_ ^b	118	_ ^b	169	_ ^b	_ ^b	_ ^b
1977	700	609	69	44	160	130	929	783
1978	699	650	71	47	158	137	928	834
1979	708	661	70	50	165	129	943	840
1980	709	654	71	52	163	128	943	834
1981	711	666	70	45	162	125	943	836
1982	710	664	76	45	166	111	952	820
1983	708	655	73	40	164	115	945	810
1984	708	674	73	39	159	99	940	812
1985	708	664	71	40	159	113	938	817
1986	707	670	71	30	161	101	939	801
1987	706	656	71	33	161	108	938	797
1988	707	677	71	43	160	124	938	844
1989	707	682	70	42	160	127	937	851
1990	708	675	71	35	157	116	936	826
1991	708	680	72	36	155	110	935	826
1992	707	678	71	32	165	111	943	821
1993	707	682	72	35	166	88	945	805
1994	707	659	72	30	165	73	944	762
1995	707	663	73	36	166	106	946	805
1996	707	628 ^c	72	28 ^c	166	107 ^c	945	763 ^c
1997	705	640 ^c	72	22 ^c	163	63 ^c	940	725 ^c
1998	704	643 ^c	72	6 ^c	162	22 ^c	938	671 ^c
5 Year Average 1993-1997	707	654	72	30	165	87	944	772

^a Information obtained from CFEC unless otherwise indicated. Includes permanent and interim-use permits.

^b Information unavailable.

^c Data source: ADF&G.

Appendix A.9. Number of commercial salmon fishing gear permit holders by district and season,
Yukon Area, 1971-1998. ^a

Chinook and Summer Chum Salmon Season									
Year	Lower Yukon Area				Upper Yukon Area				Yukon Area Total
	District 1	District 2	District 3	Subtotal ^b	District 4	District 5	District 6	Subtotal	
1971	405	154	33	592	-	-	-	-	592
1972	426	153	35	614	-	-	-	-	614
1973	438	167	38	643	-	-	-	-	643
1974	396	154	42	592	27	31	20	78	670
1975	441	149	37	627	93	52	36	181	808
1976	453	189	42	684	80	46	29	155	839
1977	392	188	46	626	87	41	18	146	772
1978	429	204	22	655	80	45	35	160	815
1979	425	210	22	657	87	34	30	151	808
1980	407	229	21	657	79	35	33	147	804
1981	448	225	23	696	80	43	26	149	845
1982	450	225	21	696	74	44	20	138	834
1983	455	225	20	700	77	34	25	136	836
1984	444	217	20	681	54	31	27	112	793
1985	425	223	18	666	74	32	27	133	799
1986	441	239	7	687	75	21	27	123	810
1987	440	239	13	692	87	30	24	141	833
1988	456	250	22	728	95	28	33	156	884
1989	445	243	16	704	98	32	29	159	863
1990	453	242	15	710	92	27	23	142	852
1991	489	253	27	769	85	32	22	139	908
1992	438	263	19	720	90	28	19	137	857
1993	448	238	6	692	75	30	18	123	815
1994	414	250	7	671	55	28	20	103	774
1995	439	233	0	672	87	28	21	136	808
1996	448	189	9	646	87	23	15	125	771
1997	457	188	0	645	39	29	15	83	727
1998	434	231	0	665	0	18	10	28	693
5 Year Average 1993-1997	441	220	4	665	69	28	18	114	781

Fall Chum and Coho Salmon Season									
Year	Lower Yukon Area				Upper Yukon Area				Yukon Area Total
	District 1	District 2	District 3	Subtotal ^b	District 4	District 5	District 6	Subtotal	
1971	352	-	-	352	-	-	-	-	352
1972	353	75	3	431	-	-	-	-	431
1973	445	183	-	628	-	-	-	-	628
1974	322	121	6	449	17	23	22	62	511
1975	428	185	12	625	44	33	33	110	735
1976	422	194	28	644	18	36	44	98	742
1977	337	172	37	546	28	34	32	94	640
1978	429	204	28	661	24	43	30	97	758
1979	458	220	32	710	31	44	37	112	822
1980	395	232	23	650	33	43	26	102	752
1981	462	240	21	723	30	50	30	110	833
1982	445	218	15	678	15	24	25	64	742
1983	312	224	18	554	13	29	23	65	619
1984	327	216	12	555	18	39	26	83	638
1985	345	222	13	580	22	39	25	86	666
1986	282	231	14	527	1	21	16	38	566
1987	0	0	0	0	0	0	0	0	0
1988	328	233	13	574	20	20	32	72	646
1989	332	229	22	583	20	24	28	72	655
1990	301	227	19	547	11	11	27	49	596
1991	319	238	19	576	8	21	25	54	630
1992	0	0	0	0	0	0	22	22	22
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	1	11	12	12
1995	189	172	0	361	4	12	20	36	397
1996	158	109	0	267	1	17	17	35	302
1997	176	130	0	306	3	8	0	11	317
1998	0	0	0	0	0	0	0	0	0
5 Year Average 1993-1997	105	82	0	187	2	8	10	19	204

-Continued-

COMBINED SEASON									
Year	Lower Yukon Area				Upper Yukon Area				Yukon Area Total
	District 1	District 2	District 3	Subtotal ^b	District 4	District 5	District 6	Subtotal	
1971	473	154	33	660	-	-	-	27	687
1972	476	153	35	664	-	-	-	-	664
1973	529	205	38	772	-	-	-	47	819
1974	485	190	42	717	28	43	27	98	815
1975	491	197	39	727	95	57	46	198	925
1976	482	220	44	746	96	62	56	214	960
1977	402	208	54	609	96	53	39	188	797
1978	472	221	29	650	82	53	38	173	823
1979	461	230	33	661	90	49	40	179	840
1980	432	247	27	654	88	51	38	177	831
1981	507	257	26	666	94	56	31	181	847
1982	455	244	22	664	76	53	27	156	820
1983	458	235	26	655	79	47	31	157	812
1984	453	236	26	676	58	45	33	136	812
1985	434	247	24	666	76	48	33	157	823
1986	444	259	18	672	75	30	27	132	804
1987	440	239	13	659	87	30	24	141	800
1988	460	260	24	683	97	35	38	170	853
1989	452	257	23	687	99	38	32	169	856
1990	459	258	22	679	92	31	30	153	832
1991	497	272	29	680	85	33	28	146	826
1992	438	263	19	679	90	28	25	143	822
1993	448	238	6	682	75	30	18	123	805
1994	414	250	7	659	55	28	20	103	762
1995	446	254	0	664	87	31	24	142	806
1996	455	217	9	628	87	29	19	135	763
1997	463	221	0	640	39	31	15	85	725
1998	434	231	0	643	0	18	10	28	671
5 Year Average									
1993-1997	445	236	4	655	69	30	19	118	772

a Number of permit holders which made at least one delivery.

b Since 1984 the subtotal for the Lower Yukon Area was the unique number of permits fished. Prior to 1984, the subtotals are additive for Districts 1, 2, and 3. Some individual fishermen in the Lower Yukon Area may have operated in more than one district during the year.

Appendix A.10. Commercial salmon pack by species and type of processing, Yukon Area, 1960-1998. ^a

Year	Cases (48#)			Fresh-Frozen (round wt. in lbs.)			Cured Chinook		Cured Chum		Salmon Roe (lbs.)
	Chinook	Coho	Chum	Chinook	Coho	Chum	Tierces	Half Tierces	Tierces	Half Tierces	
1960	13,000			- ^b	- ^b	- ^b	250	180			
1961	19,474			- ^b	- ^b	- ^b	504	146			
1962	15,959	512	1,760	- ^b	- ^b	- ^b	464	280			
1963	16,400	1,190		- ^b	- ^b	- ^b	- ^b	- ^b			
1964	12,041			- ^b	17,000	66,770	537	499			
1965	18,149			275,000	2,500	160,500	670	67			
1966	14,026	836	2,812	414,000	61,355	301,240	398	60			
1967	21,503		126	475,900	66,400	366,496	627	96			1,755
1968	19,499		816	561,690	93,154	454,409	351	170			21,000
1969	9,560	1,104	4,499	423,597	26,973 ^c	829,586 ^c	647	95	15		29,000
1970	6,431	1,002	6,413	716,600	12,900	1,725,000	447	191	51		26,300
1971	6,500	502	3,213	1,058,034	45,836	1,432,455	659	229	139		55,177
1972	7,418	1,005	6,249	1,002,395	83,960	1,495,922	497	147			85,278
1973	5,227	1,008	9,902	1,339,317	181,928	2,929,532	61	133		72	137,594
1974	6,660	603	21,074	1,062,666	58,816	3,879,300	381	56	57		208,842
1975	5,297	40	14,226	781,902	13,299	4,751,941	80	53	45	119	201,404
1976	3,921	80	11,375	1,398,779	29,778	4,256,679	93	92	72	10	226,893
1977	4,642	415	9,428	1,513,484	270,241	4,877,918	180	237	26		210,568
1978	5,711	74	9,340	1,473,354	168,241	8,639,156	222	117	7	75	261,422
1979	6,277	22	7,854	2,014,156	108,011	8,098,075	112	91		2	410,540
1980	8,764	130	15,783	3,341,262	56,295	8,781,062	29	18		37	579,927
1981	1,107	378	11,573	3,686,238	130,097	11,398,680	25	13	9	28	507,550
1982		7	751	2,790,456	246,500	4,992,877		19		1	584,053
1983		198	1,181	3,000,843	72,447	10,637,613	5	39		7	426,220
1984		5	1,768	2,426,205	590,526	5,516,532		36		16	468,244
1985				2,953,199	409,725	5,462,462		9		20 ^d	476,024
1986				2,012,324	299,054	5,960,857		15		28 ^f	502,952
1987				2,830,312	0	3,013,889		36			286,099
1988 ^g				1,970,879	624,734	9,111,943		10		22 ^h	577,748
1989 ^g				2,005,949	585,216	8,864,714		6		16	303,298
1990 ^g				1,846,081	283,504	3,166,199		3		1,368 ^k	261,016
1991 ^j				2,047,188	708,902	3,978,482				2,547 ^k	350,174
1992				2,537,833	40,685	2,398,093					260,590
1993				1,905,414	0	634,931					97,630
1994				2,260,301	744	528,666					183,873
1995				2,635,972	317,357	3,524,754					498,925
1996				1,836,242	400,960	1,733,129					443,939
1997				2,324,306	255,228	1,089,678					190,359
1998				779,936	9	191,692					28,919

^a Pack represents type of processing when fish were shipped out of districts; roe includes unprocessed roe sold by fishermen and estimated production of roe from in the round purchases.

^b Information not available.

^c Includes approximately 11,600 and 110,500 (round weight) of coho and chum salmon respectively, as salted fish for Japanese market.

^d Additionally 13 half tierces of coho salmon were packed.

^f Additionally 2 half tierces of coho salmon were packed.

^g Does not include District 6 test fish sales.

^h Additionally 1 half tierce of coho salmon was packed.

^j Beginning in 1991, no ADF&G test fish sales are included.

^k Chum salmon are represented in pounds of salted fillets.

Appendix A.11. Estimated average prices paid to fishermen, Yukon Area, 1964-1998.

Year	Lower Yukon Area				Upper Yukon Area							
	Summer		Fall	Coho	Chinook		Summer	Summer	Fall	Fall	Coho	Coho
	Chinook	Chum	Chum		Chinook	Roe	Chum	Chum	Chum	Chum		
1964	0.17		0.03									
1965	0.20											
1966	0.20											
1967	0.19	0.05	0.05	0.07								
1968	0.18	0.06	0.06									
1969	0.19	0.08	0.08	0.08								
1970	0.22	0.09	0.09	0.12								
1971	0.24	0.10	0.10	0.12								
1972	0.24	0.11	0.11	0.13								
1973	0.30	0.16	0.16	0.18								
1974	0.38	0.21	0.21	0.25	0.50		0.15		0.13		0.15	
1975	0.42	0.20	0.20	0.21	0.92		0.17		0.14		0.17	
1976	0.51	0.24	0.24	0.27	0.74		0.19		0.16		0.19	
1977	0.85	0.40	0.45	0.50	1.37		0.27	2.66	0.22		0.27	
1978	0.90	0.45	0.47	0.60	0.87		0.24	- ^a	0.25		0.24	
1979	1.09	0.52	0.68	0.80	1.00		0.25	3.00	0.29		0.25	
1980	1.04	0.20	0.28	0.36	0.85		0.23	2.50	0.27		0.29	
1981	1.20	0.40	0.55	0.60	1.00		0.20	3.00	0.35		0.35	
1982	1.41	0.40	0.55	0.69	1.02		0.18	2.75	0.28		0.37	
1983	1.40	0.34	0.34	0.35	1.08		0.16	1.66	0.19		0.31	
1984	1.50	0.26	0.32	0.50	0.95		0.23	1.78	0.26		0.24	
1985	1.50	0.35	0.47	0.53	0.86		0.23	1.94	0.25		0.33	
1986	1.63	0.38	0.49	0.71	0.89		0.22	2.08	0.14		0.21	
1987	1.98	0.49	-	-	0.79		0.19	2.22	-		-	
1988	2.97	0.66	1.01	1.38	1.04		0.23	4.33	0.32		0.37	
1989	2.77	0.34	0.50	0.66	0.84		0.24	4.41	0.28		0.35	
1990	2.84	0.24	0.45	0.66	0.72		0.11	4.41	0.29		0.34	
1991	3.70	0.36	0.34	0.44	0.70	2.92	0.18	4.21	0.23	3.56	0.30	2.50
1992	4.12	0.27	-	-	0.91	2.82	0.30	4.53	0.39	4.50	0.39	2.18
1993	2.70	0.38	-	-	1.06	5.52	0.35	8.53	-	-	-	-
1994	2.07	0.21	-	-	0.92	3.11	0.20	3.77	0.16	1.50	0.48	1.50
1995	2.09	0.16	0.15	0.29	0.77	2.64	0.13	3.57	0.13	2.96	0.14	2.51
1996	1.95	0.09	0.10	0.26	0.95	2.57	0.07	3.05	0.13	1.71	0.09	2.16
1997	2.46	0.10	0.22	0.32	0.97	1.62	0.07	1.08	0.17	1.75	0.20	-
1998	2.51	0.14	-	-	0.91	2.00	0.18	1.90	-	-	-	-
5-Year Average 1993-1997	2.25	0.19	-	-	0.93	3.09	0.16	4.00	-	-	-	-

^a Data unavailable.

Appendix A.12. Exvessel value of commercial salmon fishery to the fishermen, Yukon Area, 1977-1998.

Year	Summer Season							Fall Season							Total Season	Total Value
	Chinook Salmon		Subtotal	Summer Chum Salmon		Total Season	Fall Chum Salmon		Subtotal	Coho Salmon		Total Season				
	Lower Yukon	Upper Yukon		Lower Yukon	Upper Yukon		Lower Yukon	Upper Yukon		Lower Yukon	Upper Yukon					
	Value	Value		Value	Value		Value	Value		Value	Value					
1977	1,841,033	148,766	1,989,799	1,007,280	306,481	1,313,761	3,303,560	718,571	102,170	820,741	140,914	2,251	143,165	963,906	4,267,466	
1978	2,048,674	66,472	2,115,146	2,071,434	655,738	2,727,172	4,842,318	691,854	103,091	794,945	96,823	6,105	102,928	897,873	5,740,191	
1979	2,763,433	124,230	2,887,663	2,242,564	444,924	2,687,488	5,575,151	1,158,485	347,814	1,506,299	83,466	6,599	90,065	1,596,364	7,171,515	
1980	3,409,105	113,662	3,522,767	1,027,738	627,249	1,654,987	5,177,754	394,162	198,088	592,250	17,374	2,374	19,748	611,998	5,789,752	
1981	4,420,669	206,380	4,627,049	2,741,178	699,876	3,441,054	8,068,103	1,503,744	356,805	1,860,549	87,385	4,568	91,953	1,952,502	10,020,605	
1982	3,768,107	162,699	3,930,806	1,237,735	452,837	1,690,572	5,621,378	846,492	53,258	899,750	135,828	18,786	154,614	1,054,364	6,675,742	
1983	4,093,562	105,584	4,199,146	1,734,270	281,883	2,016,153	6,215,299	591,011	128,950	719,961	17,497	11,472	28,969	748,930	6,964,229	
1984	3,510,923	102,354	3,613,277	926,922	382,776	1,309,698	4,922,975	374,359	103,417	477,776	256,050	12,823	268,873	746,649	5,669,624	
1985	4,294,432	82,644	4,377,076	1,032,700	593,801	1,626,501	6,003,577	634,616	178,125	812,741	176,254	26,797	203,051	1,015,792	7,019,369	
1986	3,165,078	73,363	3,238,441	1,746,455	634,091	2,380,546	5,618,987	399,321	30,309	429,630	211,942	556	212,498	642,128	6,261,115	
1987	5,428,933	136,196	5,565,129	1,313,618	323,611	1,637,229	7,202,358	0	0	0	0	0	0	0	7,202,358	
1988	5,463,800	142,284	5,606,084	5,001,100	1,213,991	6,215,091	11,821,175	638,700	151,300	790,000	734,400	34,116	768,516	1,558,516	13,379,691	
1989	5,181,700	108,178	5,289,878	2,217,700	1,377,117	3,594,817	8,884,695	713,400	223,996	937,396	323,300	33,959	357,259	1,294,655	10,179,350	
1990	4,820,859	105,295	4,926,154	497,571	506,611	1,004,182	5,930,336	238,165	174,965	413,130	137,302	37,026	174,328	587,458	6,517,794	
1991	7,128,300	97,140	7,225,440	782,300	627,177	1,409,477	8,634,917	438,310	157,831	596,141	300,182	21,556	321,738	917,879	9,552,796	
1992	9,957,002	168,999	10,126,001	606,976	525,204	1,132,180	11,258,181	0	54,161	54,161	0	19,529	19,529	73,690	11,331,871	
1993	4,884,044	113,217	4,997,261	226,772	203,762	430,534	5,427,795	0	0	0	0	0	0	0	5,427,795	
1994	4,169,270	124,270	4,293,540	79,206	396,685	475,891	4,769,431	0	8,517	8,517	0	8,739	8,739	17,256	4,786,687	
1995	5,317,508	87,059	5,404,567	241,598	1,060,322	1,301,920	6,706,487	185,036	167,571	352,607	80,019	11,292	91,311	443,918	7,150,405	
1996	3,491,582	47,282	3,538,864	89,020	966,277	1,055,297	4,594,161	48,579	45,438	94,017	96,795	13,020	109,815	203,832	4,797,993	
1997	5,450,433	110,713	5,561,146	56,535	96,806	153,341	5,714,487	86,526	7,252	93,778	79,973	1,062	81,035	174,813	5,889,300	
1998	1,911,370	17,285	1,928,655	26,415	821	27,236	1,955,891	0	0	0	0	0	0	0	1,955,891	
5 Year Average																
1993-1997	4,662,567	96,508	4,759,076	138,626	544,770	683,397	5,442,472	64,028	45,756	109,784	51,357	6,823	58,180	167,964	5,610,436	

Appendix A.13. Average weight of commercial salmon catch in pounds, Yukon Area, 1964-1998. ^a

Year	Lower Yukon Area				Upper Yukon Area			
	Chinook	Summer Chum	Fall Chum	Coho	Chinook	Summer Chum	Fall Chum	Coho
1964	22.6							
1965	23.0							
1966	23.0							
1967	24.0			7.3				
1968	26.5							
1969	23.9			6.7				
1970	22.3			7.1				
1971	22.6			6.9				
1972	24.6	6.6	7.6	7.1				
1973	24.5	6.8	7.9	7.1				
1974	23.7	6.5	7.5	7.0	17.3	6.7	7.7	6.7
1975	22.0	6.5	7.5	7.2	17.7	6.6	8.0	6.6
1976	21.9	6.5	7.5	6.6	18.4	6.4	8.0	7.5
1977	23.9	7.0	8.0	7.5	17.6	6.5	8.0	6.5
1978	24.0	7.1	7.7	7.0	20.2	6.8	7.4	6.4
1979	20.9	7.4	7.4	7.3	20.2	6.6	7.7	6.5
1980	22.5	6.9	6.9	6.4	16.0	6.6	7.7	6.5
1981	24.8	7.5	8.0	6.8	23.7	7.1	7.4	5.7
1982	23.0	7.1	7.7	6.7	21.4	7.1	7.5	6.5
1983	20.5	7.2	7.9	7.0	19.1	6.6	7.7	6.0
1984	20.5	6.8	7.5	7.0	19.6	6.4	7.3	6.1
1985	20.3	6.7	7.7	7.4	18.4	6.1	7.5	6.4
1986	20.2	6.9	7.2	6.3	19.7	6.1	8.0	6.0
1987	21.7	6.8	-	-	20.0	6.8	-	-
1988	19.6	7.0	7.9	7.3	18.6	6.9	7.9	6.6
1989	19.9	7.2	7.5	7.3	17.9	6.8	7.4	6.0
1990	19.6	7.3	7.7	6.8	16.8	6.9	7.0	6.2
1991	20.4	6.7	7.4	7.0	17.6	6.5	6.8	5.7
1992	21.5	6.9	-	-	19.9	5.6	6.8	6.2
1993	20.5	6.6	-	-	17.8	7.2	-	-
1994	20.3	6.5	-	-	15.7	5.8	6.2	6.2
1995	21.6	6.7	7.5	6.9	17.8	5.4	7.0	7.0
1996	20.6	7.8	7.7	7.6	16.2	6.0	6.2	7.2
1997	20.9	7.2	7.6	7.3	15.4	5.9	6.4	6.5
1998	18.0	6.7	-	-	13.2	6.1	-	-
5 Year Average								
1993-1997	20.8	7.0	7.6	7.3	16.6	6.1	6.5	6.7

^a Information not available for some years. Data obtained from weight samples or from fish ticket information.

Appendix A.14 Commercial chinook salmon quotas or guideline harvest ranges (GHR), Yukon Area, 1974-1998.

Year	Districts 1 and 2 GHR	District 3 Quota/GHR	District 4 Quota/GHR	Subdistricts 5-ABC Quota/GHR	Subdistrict 5-D Quota/GHR	District 6 Quota/GHR
1974	-	3,000	1,000	3,000 ^a		1,000
1975	-	3,000	1,000	3,000 ^a		1,000
1976	-	3,000	1,000	3,000 ^a		1,000
1977	-	3,000	1,000	3,000 ^a		1,000
1978	-	2,000	1,000	3,000 ^a		1,000
1979 ^b	-	1,800-2,200	900-1,100	2,700-3,300 ^a		900-1,100
1980	-	1,800-2,200	900-1,100	2,700-3,300 ^a		900-1,100
1981	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1982	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1983	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1984	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1985	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1986	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1987	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1988	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1989	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1990	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1991	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1992	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1993	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1994	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1995	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1996	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1997	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800
1998	60,000-120,000	1,800-2,200	2,250-2,850	2,400-2,800	300-500	600-800

a Quota or guideline harvest range for all of District 5.

b Beginning in 1979, quotas were replaced by guideline harvest ranges.

Appendix A.15. Commercial summer chum salmon guideline harvest ranges (GHR), Yukon Area, 1990-1998.

Year	Districts 1 and 2	District 3	Subdistrict 4-A		Anvik River	Subdistricts 4-BC	District 5	District 6
	GHR	GHR	GHR		Roe Cap	GHR	GHR	GHR
			Pounds of Roe ^a	Numbers of Fish				
1990	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000		16,000-47,000	1,000-3,000	13,000-38,000
1991	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000		16,000-47,000	1,000-3,000	13,000-38,000
1992	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000		16,000-47,000	1,000-3,000	13,000-38,000
1993	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000		16,000-47,000	1,000-3,000	13,000-38,000
1994	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000	- ^b	16,000-47,000	1,000-3,000	13,000-38,000
1995	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000	50,000	16,000-47,000	1,000-3,000	13,000-38,000
1996	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000	100,000	16,000-47,000	1,000-3,000	13,000-38,000
1997	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000	100,000	16,000-47,000	1,000-3,000	13,000-38,000
1998	251,000-755,000	6,000-19,000	61,000-183,000	113,000-338,000	100,000	16,000-47,000	1,000-3,000	13,000-38,000

a Summer chum salmon roe cap of 183,000 pounds.

b No summer chum salmon roe cap was established for Anvik River Management Area in 1994.

Date	Period and (Cumulative) Harvest ^a													
	1985	1986	1987	1988	1989 ^b	1990 ^c	1991 ^d	1992 ^f	1993	1994	1995	1996	1997	1998
06/01														
06/02														
06/03														
06/04														
06/05														
06/06														
06/07														
06/08														
06/09														
06/10												14.0 (14.0)		
06/11													11.4 (11.4)	
06/12											18 (18.4)			
06/13										14 (13.5)		6.8 (20.8)		
06/14				5.9 (5.9)			17 (17.1)							
06/15						19.0 (19.0)			9 (9.1)		18 (35.9)			1.8 (1.8)
06/16			13.0 (13.0)		18.9 (18.9)					23 (36.5)			11.2 (22.5)	
06/17				16.0 (21.9)								6.7 (27.5)		
06/18							15 (32.2)		23 (32.1)					
06/19			22.5 (35.5)								7 (42.4)		20.1 (42.7)	
06/20		21.7 (21.7)			10.8 (29.7)			12 (11.5)				11.3 (38.8)		
06/21				10.9 (32.8)			4.7 (36.9)		10 (42.5)					
06/22					2.5 (32.2)	15.0 (34.0)		22 (33.6)		14 (50.3)	21 (64.0)			
06/23			15.0 (50.5)										7.4 (50.1)	11.8 (13.6)
06/24		10.2 (31.9)										10.9 (49.7)		
06/25	23.6 (23.6)						9 (46.2)							
06/26			11.6 (62.1)					10 (43.6)			11 (75.0)		13.0 (63.1)	
06/27										11 (61.5)		6.9 (56.6)		7.2 (20.8)
06/28	33.7 (57.3)								3 (45.4)					
06/29						6.5 (40.4)								
06/30		5.6 (37.5)												
07/01									2 (47.0)					
07/02	18.8 (76.1)						6 (52.1)	11 (54.6)						
07/03						1.7 (42.1)								
07/04		5.4 (42.9)												
07/05														
07/06														
07/07													3.4 (24.2)	
07/08														

^a Catch by period in thousands of fish. Cumulative catch during unrestricted mesh size fishing periods, in thousands of fish, are located in the brackets ().

^b Does not include 3,211 chinook salmon sold illegally.

^c Does not include 1,101 chinook salmon sold illegally.

^d Does not include 2,711 chinook salmon sold illegally.

^f Does not include 1,218 chinook salmon sold illegally.

Appendix B.3. Commercial chinook salmon harvest data by unrestricted mesh size periods, District 2, Lower Yukon Area, 1978-1998.

Period and (Cumulative) Harvest ^a										
Date	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
06/01										
06/02										
06/03										
06/04		2 (1.6)								
06/05										
06/06										
06/07		1 (3.0)								
06/08				8 (7.6)						
06/09	5 (4.8)		4 (3.9)							
06/10										
06/11		5 (8.1)		11 (19.0)						
06/12	3 (8.0)		8 (11.7)							
06/13						6 (6.0)				
06/14										
06/15		14 (22.3)		11 (29.5)						
06/16	4 (12.3)		11 (22.6)			7 (13.3)				
06/17					4 (4.0)					
06/18		4 (26.2)		8 (37.7)						10 (9.5)
06/19	8 (20.1)									
06/20			8 (30.7)			11 (23.9)				
06/21		7 (33.4)			8 (11.8)		6 (5.6)			
06/22										12 (21.7)
06/23	4 (24.2)		12 (42.7)			7 (30.8)			15 (14.5)	
06/24					12 (23.7)					
06/25							14 (20.0)			11 (32.5)
06/26	5 (28.9)									
06/27								7 (7.0)	12 (26.8)	
06/28					3 (27.1)		9 (29.4)			
06/29										8 (40.1)
06/30										
07/01					9 (35.7)			18 (25.3)		
07/02									7 (34.2)	
07/03										
07/04								13 (38.2)		
07/05										
07/06										
07/07									2 (36.6)	
07/08										

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Appendix A.16. Commercial fall chum salmon quotas or guideline harvest ranges (GHR), Yukon Area, 1974-1998. ^a

Year	Districts 1, 2, and 3 Quota/GHR	District 4 Quota	Subdistricts 4-BC GHR	District 5 Quota/GHR	Subdistricts 5-ABC GHR	Subdistrict 5-D GHR	District 6 Quota/GHR
1974	200,000	10,000	-	25,000	-	-	15,000
1975	200,000	10,000	-	25,000	-	-	15,000
1976	200,000	10,000	-	25,000	-	-	15,000
1977	200,000	10,000	-	25,000	-	-	15,000
1978	200,000	10,000	-	25,000	-	-	15,000
1979 ^b	120,000-220,000	-	10,000-40,000	10,000-40,000	-	-	7,500-22,500
1980	120,000-220,000	-	10,000-40,000	10,000-40,000	-	-	7,500-22,500
1981	120,000-220,000	-	10,000-40,000	-	8,000-36,000	2,000-4,000	5,500-20,500
1982	120,000-220,000	-	10,000-40,000	-	8,000-36,000	2,000-4,000	5,500-20,500
1983	120,000-220,000	-	10,000-40,000	-	8,000-36,000	2,000-4,000	5,500-20,500
1984	120,000-220,000	-	10,000-40,000	-	8,000-36,000	2,000-4,000	5,500-20,500
1985	120,000-220,000	-	10,000-40,000	-	8,000-36,000	2,000-4,000	5,500-20,500
1986	0-110,000	-	0-20,000	-	0-18,000	0-2,000	0-10,250
1987	0-110,000	-	0-20,000	-	0-18,000	0-2,000	0-10,250
1988	0-110,000	-	0-20,000	-	0-18,000	0-2,000	0-10,250
1989	0-110,000	-	0-20,000	-	0-18,000	0-2,000	0-10,250
1990	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1991	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1992	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1993	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1994	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1995	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1996	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1997	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500
1998	60,000-220,000	-	5,000-40,000	-	4,000-36,000	1,000-4,000	2,750-20,500

^a Fall chum and coho salmon combined quota or guideline harvest range for Upper Yukon Area (1974-1992). Beginning in 1993, regulations were changed to exclude coho salmon.

^b In 1979, quotas were replaced by guideline harvest ranges.

Appendix A.17. Chinook salmon total utilization in numbers of fish by district, area and country, Yukon River drainage, 1961-1998.^a

Year	District 1					District 2				District 3			Lower Yukon Area Subtotals				
	Subsistence	Commercial ^{b,c}	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial ^{b,c}	ADF&G Test Fish	Total	Subsistence	Commercial	Total	Subsistence	Commercial	Personal Use	ADF&G Test Fish	Total
1961		84,466			84,466			29,026	29,026		4,368	4,368		117,860			117,860
1962		67,099			67,099			22,224	22,224		4,687	4,687		94,010			94,010
1963		85,004			85,004			24,221	24,221		7,020	7,020		116,245			116,245
1964		67,555			67,555			20,246	20,246		4,705	4,705		92,506			92,506
1965		89,268			89,268			23,763	23,763		3,204	3,204		116,235			116,235
1966		70,788			70,788			16,927	16,927		3,612	3,612		91,327			91,327
1967		104,350			104,350			20,239	20,239		3,618	3,618		128,207			128,207
1968		79,465			79,465			21,392	21,392		4,543	4,543		105,400			105,400
1969		71,888			71,888			14,756	14,756		3,595	3,595		90,039			90,039
1970		56,648			56,648			17,141	17,141		3,705	3,705		77,494			77,494
1971		86,042			86,042			19,226	19,226		3,490	3,490		108,758			108,758
1972		70,052			70,052			17,855	17,855		3,841	3,841		91,748			91,748
1973		56,981			56,981			13,859	13,859		3,204	3,204		74,044			74,044
1974		71,840			71,840			17,948	17,948		3,480	3,480		93,268			93,268
1975		44,585			44,585			11,315	11,315		4,177	4,177		60,077			60,077
1976		62,410			62,410			16,556	16,556		4,148	4,148		83,114			83,114
1977		89,915			89,915			16,722	16,722		3,965	3,965		90,602			90,602
1978	5,246	59,006			64,252	3,964	32,924		36,888	3,902	2,916	6,818	13,112	94,846			107,958
1979	2,879	75,007			77,886	4,268	41,498		45,766	3,325	5,018	8,343	10,472	121,523			131,995
1980	3,669	90,362			94,031	3,674	50,004		53,678	4,818	5,240	10,058	12,161	145,626			157,787
1981	2,282	99,506			101,788	3,580	45,781		49,361	4,011	4,023	8,034	9,873	149,310			159,183
1982	2,311	74,450			76,761	2,109	39,132		41,241	3,359	2,809	5,968	7,779	116,191			123,970
1983	6,263	95,457			101,720	9,065	43,229		52,294	4,910	4,106	9,016	20,238	142,792			163,030
1984	4,624	74,671			79,295	7,172	36,697		43,869	4,394	3,039	7,433	16,190	114,407			130,597
1985	3,071	90,011			93,082	3,466	48,365		51,833	3,342	2,588	5,930	9,881	140,964			150,845
1986	5,275	53,035			58,310	6,483	41,849		48,332	4,305	901	5,206	16,063	95,785			111,848
1987	7,278	76,643	0		83,921	9,666	47,458		57,124	4,708	2,039	6,747	21,852	126,140	0		147,992
1988	3,936	56,120	67	989	61,114	3,623	35,120	68	39,011	4,547	1,767	6,314	12,308	93,007	67	1,057	106,439
1989	4,565	61,570	286	794	67,215	7,147	33,166	59	40,372	4,778	1,645	6,423	16,490	98,381	286	853	114,010
1990	6,619	51,199	450	1,063	59,331	9,546	33,061	152	42,759	4,093	2,341	6,434	20,258	86,601	450	1,215	108,524
1991	5,925	56,332	-	485	62,742	7,617	39,260	113	46,990	3,187	2,344	5,531	16,729	97,936	-	598	115,263
1992	5,141	74,212	-	930	80,283	7,074	38,138	0	45,213	4,991	1,819	6,810	17,206	114,170	-	930	132,306
1993	10,423	49,286	-	1,408	61,117	11,516	37,293	164	48,973	6,602	1,501	8,103	28,541	88,080	-	1,572	118,193
1994	6,654	62,241	-	1,561	70,456	9,034	41,692	70	50,796	6,149	1,114	7,263	21,837	105,047	-	1,631	128,515
1995	5,960	76,106	-	2,078	84,144	9,037	41,458	74	50,569	5,419	0	5,419	20,416	117,584	-	2,152	140,132
1996	3,646	56,642	-	1,698	61,986	7,780	30,209	0	37,989	6,783	0	6,783	18,209	86,851	-	1,698	106,758
1997	7,550	66,384	-	2,791	76,725	9,350	39,363	20	48,733	6,311	0	6,311	23,211	105,747	-	2,811	131,769
1998	7,242	25,413	-	878	33,533	9,455	16,806	48	26,309	4,514	0	4,514	21,211	42,219	-	926	64,356
5 Year Average																	
1993-1997	6,847	62,132	-	1,907	70,886	9,343	38,003	66	47,412	6,253	523	6,776	22,443	100,658	-	1,973	125,073
10 Year Average																	
1988-1997	6,042	61,009	-	1,380	68,511	8,192	36,876	72	45,141	5,286	1,253	6,539	19,521	99,138	-	1,452	120,191

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Year	District 4				District 5				District 6						Upper Yukon Area Subtotals							
	Subsistence	Commercial	Commercial Related ^d	Total	Subsistence	Commercial	Commercial Related ^d	Personal Use	Total	Subsistence	Commercial ^b	Commercial Related ^d	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial	Commercial Related ^d	Personal Use	ADF&G Test Fish	Total	
1961																	1,804	0			1,804	
1962																	724	0			724	
1963																	803	0			803	
1964																	1,081	0			1,081	
1965																	1,863	0			1,863	
1966																	1,988	0			1,988	
1967																	1,449	0			1,449	
1968																	1,128	0			1,126	
1969																	988	0			988	
1970																	1,651	0			1,651	
1971																	1,749	0			1,749	
1972																	1,092	0			1,092	
1973																	1,309	0			1,309	
1974		685	0	685		2,663	0		2,663		1,473	0					4,821	0			4,821	
1975		389	0	389		2,872	0		2,872		500	0					3,761	0			3,761	
1976		409	0	409		3,151	0		3,151		1,102	0					4,662	0			4,662	
1977		985	0	985		4,162	0		4,162		1,008	0					6,155	0			6,155	
1978	5,549	608	0	6,157	10,405	3,079	0		13,484	1,231	635	0			1,886	17,185	4,322	0			21,507	
1979	7,203	1,989	0	9,192	11,997	3,389	0		15,386	1,333	772	0			2,105	20,533	6,150	0			26,683	
1980	11,053	1,521	0	12,574	17,684	4,891	0		22,575	1,826	1,947	0			3,773	30,563	8,359	0			38,922	
1981	4,432	1,347	0	5,779	13,300	6,374	0		19,674	2,085	987	0			3,072	19,817	8,708	0			28,525	
1982	5,077	1,087	0	6,164	12,859	5,385	0		18,244	2,443	981	0			3,424	20,379	7,453	0			27,832	
1983	9,754	601	0	10,355	16,780	3,606	0		20,386	2,708	911	0			3,617	29,240	5,118	0			34,358	
1984	7,650	961	0	8,611	14,989	3,669	0		18,658	3,599	867	0			4,466	26,238	5,497	0			31,735	
1985	7,425	664	0	8,089	15,090	3,418	0		18,508	7,375	1,142	0			8,517	29,890	5,224	0			35,114	
1986	8,530	502	0	10,032	15,944	2,733	0		18,677	3,701	950	0			4,651	29,175	4,185	0	0		33,360	
1987	7,914	1,524	0	9,438	17,556	3,758	0	1,706	23,020	4,096	3,338	0			7,434	29,568	8,620	0	1,706		39,892	
1988	9,515	3,159	0	12,674	17,200	3,436	0	1,435	22,071	4,684	762	0	623	24	6,293	31,599	7,357	0	2,058	24	41,038	
1989	9,074	2,790	0	11,864	20,336	3,286	0	1,877	25,499	2,546	1,741	0	453	440	5,180	31,956	7,817	0	2,330	440	42,543	
1990	11,122	3,536	2	14,660	14,589	3,353	12	1,693	19,647	2,618	1,757	399	451	833	6,058	28,329	8,646	413	2,144	833	40,365	
1991	11,100	2,448	1,136	14,682	16,429	3,610	16	-	20,255	2,515	686	386	0	91	3,678	30,044	6,942	1,538	0	91	38,615	
1992	8,291	1,651	743	10,685	17,691	3,852	3	-	21,546	2,438	572	181	0	32	3,223	28,420	6,075	927	0	32	35,454	
1993	11,914	1,349	228	13,491	22,111	3,008	0	-	25,119	2,709	1,113	332	426	0	4,580	36,734	5,470	560	426	0	43,190	
1994	10,530	2,216	227	12,973	19,628	3,739	5	-	23,372	2,568	2,135	471	0	0	5,174	32,726	8,090	703	0	0	41,519	
1995	9,474	262	237	9,973	16,866	3,242	0	-	20,108	1,779	1,660	1,087	399	0	4,925	28,119	5,164	1,324	399	0	35,006	
1996	8,193	45	92	8,330	15,727	2,497	260	-	18,484	1,177	278	169	215	0	1,839	25,097	2,820	521	215	0	28,653	
1997	12,006	1,450	7	13,463	18,049	3,678	0	-	21,727	2,712	1,966	762	313	0	5,753	32,767	7,094	769	313	0	40,943	
1998	15,801	0	0	15,801	14,802	517	0	-	15,319	1,919	882	81	357	0	3,239	32,522	1,399	81	357	0	34,359	
5 Year Average																						
1993-1997	10,423	1,064	158	11,646	18,476	3,233	53		21,762	2,189	1,430	564	271	0	4,454	31,089	5,728	775	271	0		37,862
10 Year Average																						
1988-1997	10,122	1,890	267	12,280	17,863	3,390	30		21,783	2,595	1,267	379	288	142	4,670	30,579	8,548	676	789	142		38,733

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Year	Yukon Area Totals							Canada: Yukon Territories							Total Yukon River Drainage						
	Subsistence	Commercial	Commercial Related ^d	Personal Use	ADF&G Test Fish	Sport Fish ^f	Total	Mainstem Yukon				Old Crow			Subsistence	Commercial	Commercial Related ^d	Personal Use	ADF&G Test Fish	Sport Fish	Total
								Non-Commercial			Commercial	Total	Aboriginal	Total							
								Domestic	Aboriginal	Sport ^g											
1961	21,488	119,864	0				141,152		9,300		3,448	12,746	500	13,246	31,288	123,110					154,398
1962	11,110	94,734	0				105,844		9,300		4,037	13,337	600	13,937	21,010	98,771					119,781
1963	24,862	117,048	0				141,910		7,750		2,283	10,033	44	10,077	32,656	119,331					151,987
1964	16,231	93,587	0				109,818		4,124		3,208	7,332	76	7,408	20,431	96,795					117,226
1965	16,608	118,098	0				134,706		3,021		2,265	5,286	94	5,380	19,723	120,363					140,086
1966	11,572	93,315	0				104,887		2,445		1,942	4,387	65	4,452	14,082	95,257					109,339
1967	16,448	129,656	0				146,104		2,920		2,187	5,107	43	5,150	19,411	131,843					151,254
1968	12,106	106,526	0				118,632		2,800		2,212	5,012	30	5,042	14,938	108,738					123,674
1969	14,000	91,027	0				105,027		957		1,840	2,597	27	2,624	14,984	92,667					107,651
1970	13,874	79,145	0				93,019		2,044		2,611	4,655	8	4,663	15,928	81,756					97,682
1971	25,684	110,507	0				136,191		3,260		3,178	6,438	9	6,447	28,953	113,685					142,638
1972	20,258	92,840	0				113,098		3,980		1,769	5,729		5,729	24,218	94,609					118,827
1973	24,317	75,353	0				99,670		2,319		2,199	4,518	4	4,522	26,640	77,552					104,192
1974	19,984	98,089	0				118,053	406	3,342		1,808	5,556	75	5,631	23,787	99,897					123,684
1975	13,045	63,838	0				76,883	400	2,500		3,000	5,900	100	6,000	16,045	86,838					82,883
1976	17,806	87,776	0				105,582	500	1,000		3,500	5,000	25	5,025	19,331	91,276					110,607
1977	17,581	96,757	0			156	114,494	531	2,247		4,720	7,498	29	7,527	20,388	101,477			156		122,021
1978	30,297	99,168	0			523	129,988	421	2,485		2,975	5,881		5,881	33,203	102,143			523		135,869
1979	31,005	127,673	0			554	159,232	1,200	3,000		6,175	10,375		10,375	35,205	133,848			554		169,607
1980	42,724	153,985	0			956	197,665	3,500	7,546	300	9,500	20,846	2,000	22,846	55,770	163,485			1,256		220,511
1981	29,680	158,019	0			769	188,477	237	8,879	300	8,593	18,009	100	18,109	38,906	168,811			1,069		206,586
1982	28,158	123,644	0			1,006	152,808	435	7,433	300	8,640	18,808	400	17,208	36,428	132,284			1,306		170,016
1983	48,478	147,910	0			1,048	198,436	400	5,025	300	13,027	18,752	200	18,952	55,103	160,937			1,348		217,388
1984	42,428	119,904	0			351	162,683	260	5,850	300	9,885	16,295	500	16,795	49,038	129,789			651		179,478
1985	39,771	146,188	0			1,368	187,327	478	5,800	300	12,573	19,151	150	19,301	46,199	158,761			1,668		206,628
1986	45,238	99,970	0			796	146,004	342	8,625	300	10,797	20,064	300	20,364	54,505	110,767			1,096		166,368
1987	51,418	134,760	0	1,706		502	188,386	330	6,069	300	10,864	17,563	51	17,614	57,868	145,624		1,706	802		206,000
1988	43,907	100,364	0	2,125	1,081	944	148,421	282	7,178	850	13,217	21,327	100	21,427	51,467	113,581		2,125	1,081	1,594	169,848
1989	48,446	104,198	0	2,616	1,293	1,053	157,606	400	6,930	300	9,789	17,419	525	17,944	56,301	113,987		2,616	1,293	1,353	175,550
1990	48,587	95,247	413	2,594	2,048	544	149,433	247	7,109	300	11,324	18,980	247	19,227	56,190	106,571	413	2,594	2,048	844	168,660
1991	46,773	104,878	1,538	0	689	773	154,651	227	9,011	300	10,906	20,444	163	20,607	56,174	115,784	1,538	0	689	1,073	175,258
1992	45,626	120,245	927	0	962	431	168,191	277	6,349	300	10,877	17,803	100	17,903	52,352	131,122	927	0	962	731	166,094
1993	65,275	93,550	560	426	1,572	1,695	163,078	243	5,576	300	10,350	16,469	142	16,611	71,236	103,900	560	426	1,572	1,995	179,689
1994	54,563	113,137	703	0	1,631	2,281	172,315	373	6,069	300	12,028	20,790	428	21,218	63,453	125,165	703	0	1,631	2,581	193,533
1995	48,535	122,728	1,324	399	2,152	2,525	177,663	300	7,945	700	11,146	20,091	796	20,887	57,576	133,874	1,324	399	2,152	3,225	198,550
1996	43,306	89,671	521	215	1,698	3,151	138,562	141	8,451	790	10,164	19,548	66	19,612	51,964	99,835	521	215	1,698	3,941	158,174
1997	55,978	112,841	769	313	2,811	1,913	174,625	288	8,888	1,230	5,311	15,717	811	16,528	65,965	118,152	769	313	2,811	3,143	191,153
1998	53,733	43,618	81	357	926		98,715	24	5,424	0	390	5,838	99	5,937	59,280	44,008	81	357	926	0	104,652
5 Year Average																					
1993-1997	53,531	106,385	775	271	1,973	2,313	185,249	269	7,790	664	9,800	18,523	449	18,971	62,039	116,185	775	271	1,973	2,977	184,220
10 Year Average																					
1988-1997	50,100	105,686	676	869	1,594	1,531	160,455	278	7,553	517	10,511	18,859	338	19,196	58,268	116,197	-	869	1,594	2,048	179,651

a Subsistence harvest not available by district until 1978. ADF&G test fish is the number of fish sold by test fisheries. Does not include coastal subsistence harvest in Hooper Bay and Scammon Bay.

b Includes estimates of illegal sales.

c Includes department test fish sales prior to 1988.

d Commercial related refers to the estimated harvest of female chinook salmon to produce roe sold.

f Estimated sport fish harvest for Alaskan portion of the Yukon River drainage. A majority of the sport fish harvest occurs in the Tanana River drainage, District 6. Data unavailable for 1998 as of printing.

g Canadian sport fish harvest unknown prior to 1980.

h Includes Alaskan subsistence harvest and Canadian Domestic and Aboriginal harvests.

Appendix A.18. Summer chum salmon total utilization in numbers of fish by district and area, Yukon River drainage, 1961-1998. ^a

Year	District 1					District 2				District 3			Lower Yukon Area Subtotals				
	Subsistence	Commercial ^b	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial ^b	ADF&G Test Fish	Total	Subsistence	Commercial	Total	Subsistence	Commercial ^b	Personal Use	ADF&G Test Fish	Total
1961		0					0				0			0			
1962		0					0				0			0			
1963		0					0				0			0			
1964		0					0				0			0			
1965		0					0				0			0			
1966		0					0				0			0			
1967		9,453			9,453		1,425		1,425		57	57		10,935			10,935
1968		12,995			12,995		1,407		1,407		68	68		14,470			14,470
1969		56,886			56,886		5,080		5,080		0	0		61,966			61,966
1970		117,357			117,357		19,649		19,649		0	0		137,006			137,006
1971		93,928			93,928		6,112		6,112		50	50		100,090			100,090
1972		114,234			114,234		20,907		20,907		527	527		135,668			135,668
1973		221,644			221,644		63,402		63,402		463	463		285,509			285,509
1974		466,004			466,004		74,152		74,152		1,721	1,721		541,877			541,877
1975		418,323			418,323		99,139		99,139		0	0		517,462			517,462
1976		273,204			273,204		99,190		99,190		9,802	9,802		382,196			382,196
1977		250,652			250,652		105,679		105,679		3,412	3,412		359,743			359,743
1978	30,897	393,785			424,682	21,684	227,548		249,232	1,706	27,003	28,709	54,287	648,336			702,623
1979	16,144	369,934			386,078	23,276	172,838		196,114	9,531	40,015	49,546	48,951	582,787			631,738
1980	15,972	391,252			407,224	13,681	308,704		322,385	5,727	44,782	50,509	35,380	744,738			780,118
1981	11,310	507,158			518,468	14,218	351,878		366,096	7,430	54,471	61,901	32,958	913,507			946,465
1982	18,452	249,516			267,968	18,442	182,344		200,786	5,840	4,086	9,926	42,734	435,946			478,680
1983	24,679	451,164			475,843	27,396	248,092		275,488	4,609	14,600	19,209	56,684	713,856			770,540
1984	28,459	292,676			321,135	26,996	236,931		263,927	7,351	1,087	8,438	62,806	530,694			593,500
1985	24,349	247,486			271,835	19,795	188,099		207,894	3,687	1,792	5,479	47,831	437,377			485,208
1986	38,854	381,127			419,981	41,496	288,427		329,923	12,238	442	12,680	92,588	669,996			762,584
1987	30,760	222,898	0		253,658	33,134	174,876		208,010	12,176	3,501	15,677	76,070	401,275	0		477,345
1988	28,934	645,322	416	2,876	677,548	28,787	424,461	711	453,959	14,609	13,965	28,574	72,330	1,083,748	416	3,587	1,160,081
1989	52,844	544,373	381	3,408	601,006	39,703	343,032	930	383,665	12,824	7,578	20,402	105,371	894,983	381	4,338	1,005,073
1990	36,999	146,725	256	2,186	186,166	28,453	131,755	752	160,960	9,521	643	10,164	74,973	279,123	256	2,938	357,290
1991	27,790	140,470	-	1,373	169,633	20,703	175,149	703	196,555	5,545	8,912	14,457	54,038	324,531	-	2,076	380,645
1992	33,239	177,329	-	1,918	212,486	24,731	147,129	0	171,860	9,599	65	9,664	67,569	324,523	-	1,918	394,010
1993	34,285	73,659	-	1,379	109,323	25,417	19,332	490	45,239	7,559	463	8,022	67,261	93,454	-	1,869	162,584
1994	44,753	42,332	-	2,769	89,854	28,652	12,869	443	41,964	8,551	35	8,586	81,956	55,236	-	3,212	140,404
1995	34,990	142,266	-	5,672	182,928	27,190	83,817	401	111,408	12,143	0	12,143	74,323	226,083	-	6,073	306,479
1996	27,289	92,506	-	7,309	127,104	28,426	30,727	0	59,153	11,368	1,534	12,902	67,083	124,767	-	7,309	199,159
1997	27,248	59,915	-	2,557	89,720	26,971	18,242	33	45,246	10,316	0	10,316	64,535	78,157	-	2,590	145,282
1998	26,888	21,270	-	2,935	51,093	26,280	6,848	84	33,212	6,472	0	6,472	59,640	28,118	-	3,019	90,777
5 Year Average																	
1993-1997	33,713	82,136	-	3,937	119,786	27,331	32,997	273	60,602	9,987	406	10,394	71,032	115,539	-	4,211	190,782
10 Year Average																	
1988-1997	34,837	206,490	-	3,145	244,577	27,903	138,651	446	167,001	10,204	3,320	13,523	72,944	348,461	-	3,591	425,101

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Year	District 4					District 5					District 8					Upper Yukon Area Subtotals							
	Subsistence ^c	Commercial	Commercial Related ^d	Arctic River ^e	Total	Subsistence ^g	Commercial	Commercial Related ^h	Personal Use	Total	Subsistence ^g	Commercial	Commercial Related ^h	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial	Commercial Related	Personal Use	ADF&G Test Fish	Total	
1961		0	0					0	0				0	0				0	0				
1962		0	0					0	0				0	0				0	0				
1963		0	0					0	0				0	0				0	0				
1964		0	0					0	0				0	0				0	0				
1965		0	0					0	0				0	0				0	0				
1966		0	0					0	0				0	0				0	0				
1967		0	0					0	0				0	0				0	0				
1968		0	0					0	0				0	0				0	0				
1969		0	0					0	0				0	0				0	0				
1970		0	0					0	0				0	0				0	0				
1971		0	0					0	0				0	0				0	0				
1972		0	0					0	0				0	0				0	0				0
1973		0	0					0	0				0	0				0	0				0
1974		27,866	0		27,866		8,831	0		8,831		13,318	0			13,318		48,015	0				48,015
1975		185,054	0		185,054		12,997	0		12,997		14,782	0			14,782		192,833	0				192,833
1976		211,307	0		211,307		774	0		774		8,617	0			8,617		218,698	0				218,698
1977		169,541	0		169,541		1,274	0		1,274		4,317	0			4,317		175,132	0				175,132
1978	93,139	364,184	16,920		474,243	20,423	4,892	805		25,920	3,534	34,814	8,238			48,584	117,096	403,890	25,781				546,747
1979	81,838	169,430	35,317		286,585	22,889	8,808	1,009		32,697	2,312	18,491	3,691			24,694	107,019	198,529	40,217				343,785
1980	117,305	147,560	135,824		400,689	8,584	458	0		9,050	8,428	35,855	3,282			45,583	132,325	183,871	139,106				455,302
1981	48,452	59,718	270,727		378,897	27,259	1,236	49		28,544	8,980	32,477	1,987			43,424	84,871	93,431	272,783				450,865
1982	57,987	3,847	254,072		315,886	9,770	213	21		10,004	8,942	21,597	1,517			30,056	74,879	25,457	255,810				355,746
1983	46,713	8,672	248,718		302,101	22,087	42	1,856		23,985	23,888	24,309	18			48,023	92,499	31,023	250,590				374,109
1984	49,230	1,008	277,081		327,300	31,488	845	47		32,180	23,108	58,249	335			78,690	103,824	57,903	277,443				439,170
1985	58,839	12,007	415,478		487,322	28,998	700	0		27,898	23,078	68,913	1,540			91,531	109,913	79,820	417,018				608,549
1986	53,020	300	485,235		518,555	21,833	880	0	0	22,523	14,888	50,483	2,148			67,525	89,749	51,473	487,381				608,803
1987	48,811	29,991	178,808		258,711	20,544	382	44	4,262	25,212	25,153	10,810	450			38,213	94,808	40,963	180,303	4,262			320,138
1988	86,823	24,051	488,023		578,897	28,860	722	383	567	30,612	8,888	40,129	1,846	1,242	0	51,703	124,288	84,902	468,032	1,809			659,012
1989	40,935	18,554	491,980		551,179	12,981	154	373	295	13,803	7,888	42,115	4,871	1,215	8,287	62,336	81,784	80,823	496,934	1,510	6,287		627,318
1990	26,534	12,384	210,188		249,084	9,817	11	680	841	11,129	4,285	11,127	3,708	930	5,325	25,373	40,838	23,502	214,552	1,571	5,325		285,586
1991	35,289	8,381	303,263		344,913	24,184	4	31	-	24,199	5,089	18,197	5,885	0	1,858	30,819	84,502	24,582	308,888	0	1,858		398,931
1992	35,812	2,858	208,737		247,208	12,812	102	328	-	13,042	9,504	5,028	2,189	0	48	18,781	57,828	7,790	211,284	0	48		277,031
1993	20,076	27	42,930		63,033	11,245	0	0	-	11,245	6,788	3,041	884	874	0	11,177	38,119	3,088	43,594	874	0		85,455
1994	27,488	3,811	145,423	22,573	199,085	12,508	229	235	-	12,970	10,544	21,208	10,228	0	0	41,978	50,538	25,048	178,457	0	0		254,043
1995	25,084	8,873	480,870	54,744	579,871	7,855	107	208	-	7,971	11,881	24,711	12,717	780	0	48,889	44,400	33,891	558,840	780	0		637,511
1996	18,425	0	425,807	84,833	528,865	11,508	0	338	-	11,845	7,488	22,380	24,530	905	0	55,281	35,420	22,380	535,108	905	0		593,791
1997	24,230	2,062	108,081	13,548	148,901	4,520	137	0	-	4,657	3,824	14,888	10,401	391	0	29,502	32,574	17,085	133,010	391	0		183,080
1998	18,048	0	0	0	18,048	2,314	98	14	-	2,424	8,004	387	173	84	0	8,658	26,364	493	187	84	0		27,128
5 Year Average																							
1993-1997	22,861	2,915	242,796	-	303,473	9,487	95	158	-	9,738	8,083	17,241	11,708	550	0	37,561	40,210	20,250	289,781	550	0		350,772
10 Year Average																							
1988-1997	33,848	7,858	289,389	-	348,845	13,597	147	254	-	14,147	7,573	20,280	7,886	814	1,350	37,482	55,017	28,285	314,858	784	-		400,274

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Year	Yukon Area Totals						Total
	Subsistence	Commercial	Commercial Related	Personal Use	ADF&G Test Fish	Sport Fish ¹	
1961	305,317	0	0				305,317
1962	281,858	0	0				281,858
1963	297,084	0	0				297,084
1964	361,080	0	0				361,080
1965	336,848	0	0				336,848
1966	154,508	0	0				154,508
1967	208,233	10,935	0				217,168
1968	133,880	14,470	0				148,350
1969	158,191	61,966	0				218,157
1970	188,504	137,006	0				303,510
1971	171,487	100,090	0				271,577
1972	108,006	135,868	0				243,874
1973	161,012	285,509	0				446,521
1974	227,811	589,892	0				817,703
1975	211,888	710,295	0				922,183
1976	188,872	800,894	0				787,766
1977	158,502	534,875	0			318	694,693
1978	171,383	1,052,226	25,781			451	1,249,821
1979	155,970	779,318	40,217			328	975,831
1980	167,705	928,608	139,106			483	1,235,903
1981	117,829	1,008,938	272,783			612	1,397,942
1982	117,413	461,403	255,610			780	835,206
1983	149,180	744,878	250,590			898	1,145,847
1984	188,830	588,597	277,443			585	1,033,255
1985	157,744	518,997	417,018			1,287	1,093,024
1986	182,337	721,489	487,381	0		895	1,372,082
1987	170,878	442,238	180,303	4,282		648	798,327
1988	198,599	1,148,850	488,032	2,225	3,587	1,037	1,820,130
1989	187,155	955,806	496,934	1,891	10,605	2,131	1,634,522
1990	115,609	302,825	214,552	1,827	8,283	472	643,348
1991	118,540	349,113	308,989	0	3,934	1,037	781,613
1992	125,497	332,313	211,264	0	1,987	1,308	672,349
1993	105,380	86,522	43,584	874	1,889	584	248,903
1994	132,484	80,284	178,457	0	3,212	350	394,797
1995	118,723	258,774	558,840	780	6,073	1,174	945,184
1996	102,503	147,127	535,106	905	7,309	1,854	794,804
1997	97,109	85,242	133,010	391	2,580	488	328,808
1998	86,004	28,611	187	84	3,018		117,905
5 Year Average							
1993-1997	111,242	135,790	288,781	550	4,211	882	542,435
10 Year Average							
1988-1997	127,981	378,748	314,858	869	4,941	1,039	828,414

- a Subsistence harvest estimates not available by district until 1978. Harvests prior to 1977 were estimated because catches of salmon other than were not differentiated by species. ADF&G test fish is the number of salmon sold by test fisheries.
- b Includes estimates of illegal sales (refer to Appendix A.4). Includes department test fish sales prior to 1988.
- c In 1978 and 1979, the commercial related harvest was subtracted from the subsistence harvest because it was assumed this harvest was included subsistence harvest. From 1980 through 1987, the District 4 subsistence harvest was also reduced to account for commercial related harvests b It was calculated that 80.2% of the reported subsistence harvest (excluding Innoko and Koyukuk River catches) was commercial related. Beginning in 1988, subsistence surveys documented subsistence only fishing catches and commercial related use separately.
- d In District 4, excluding the Anvik River, commercial related refers to the estimated number of females and incidental males harvested to produce r
- f Only roe has been sold in the Anvik River commercial fishery. The commercial related harvest shown is the estimated number of females harvest
- g From 1978 through 1988, the commercial related harvest was subtracted from the subsistence harvest in Districts 5 and 6 because it was assum was included in the reported subsistence harvest during that time period.
- h In Districts 5 and 6, commercial related refers to the number of females harvested to produce roe sold.
- j Estimated sport fish harvest for all chum salmon (assume majority of chums caught during summer season) in Alaskan portion of the drainage. A majority of the sport fish harvest occurs in the Tanana River drainage, District 6. Data unavailable for 1998 at this time.

Appendix A.19. Fall chum salmon total utilization in numbers of fish by district, area and country, Yukon River drainage, 1961-1998. *

Year	District 1				District 2				District 3			Lower Yukon Area Subtotals					
	Subsistence	Commercial ^b	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial ^b	ADF&G Test Fish	Total	Subsistence	Commercial	Total	Subsistence	Commercial	Personal Use	ADF&G Test Fish	Total
1961		42,461			42,461									42,461			42,461
1962		53,116			53,116									53,116			53,116
1963																	
1964		8,347			8,347									8,347			8,347
1965		22,936			22,936									22,936			22,936
1966		69,836			69,836					1,209	1,209			71,045			71,045
1967		36,451			36,451					1,823	1,823			38,274			38,274
1968		49,857			49,857					3,068	3,068			52,925			52,925
1969		128,866			128,866					1,722	1,722			130,588			130,588
1970		200,308			200,308		4,858		4,858	3,285	3,285			208,449			208,449
1971		188,533			188,533									188,533			188,533
1972		136,711			136,711		12,898		12,898	1,313	1,313			150,922			150,922
1973		173,783			173,783		45,304		45,304					219,087			219,087
1974		176,036			176,036		53,540		53,540		552	552		230,128			230,128
1975		158,183			158,183		51,666		51,666	5,590	5,590			215,439			215,439
1976		105,851			105,851		21,212		21,212	4,250	4,250			131,313			131,313
1977		131,758			131,758		51,994		51,994	15,851	15,851			199,603			199,603
1978	390	127,947			128,337	1,297	51,646		52,943	266	11,527	11,793	1,953	191,120			193,073
1979	15,788	109,406			125,194	14,662	94,042		108,704	2,443	25,955	28,398	32,893	229,403			262,296
1980	7,433	108,829			114,262	12,435	83,881		96,316	2,320	13,519	15,839	22,188	204,229			226,417
1981	15,540	167,834			183,374	11,770	154,883		166,653	3,043	19,043	22,086	30,353	341,760			372,113
1982	10,016	97,484			107,500	9,511	96,581		106,092	1,659	5,815	7,474	21,186	199,880			221,066
1983	8,238	124,371			132,609	10,341	85,645		95,986	2,863	10,018	12,881	21,442	220,034			241,476
1984	8,885	78,751			87,636	11,394	70,803		82,197	2,233	6,428	8,662	22,512	155,983			178,495
1985	13,275	129,948			143,223	11,544	40,490		52,034	2,290	5,164	7,454	27,109	175,802			202,711
1986	9,000	59,352			68,352	13,483	51,307		64,790	2,155	2,793	4,948	24,638	113,452			138,090
1987	18,467	0	0		18,467	13,454	0		13,454	3,287	0	3,287	35,208	0	0		35,208
1988	5,475	44,890	5	639	51,009	8,600	31,845	16	40,461	1,747	2,090	3,837	15,822	78,825	5	655	95,307
1989	4,914	74,235	18	3,641	82,808	10,015	97,558	348	107,921	1,023	15,332	16,355	15,952	187,125	18	3,989	207,084
1990	5,335	25,269	60	2,088	32,732	6,187	37,077	96	43,380	2,056	3,715	5,771	13,578	66,061	60	2,164	81,863
1991	3,935	59,724	-	2,455	66,114	5,628	102,628	96	108,352	615	9,213	9,828	10,178	171,565	-	2,551	184,294
1992	5,216	0	-	0	5,216	7,382	0	0	7,382	2,358	0	2,358	14,956	0	-	0	14,956
1993	7,770	0	-	0	7,770	3,094	0	0	3,094	1,449	0	1,449	12,313	0	-	0	12,313
1994	4,867	0	-	0	4,867	4,151	0	0	4,151	862	0	862	9,900	0	-	0	9,900
1995	4,698	79,345	-	1,121	85,164	3,317	90,831	0	94,148	1,672	0	1,672	9,687	170,176	-	1,121	180,984
1996	4,147	33,629	-	1,717	39,493	5,287	29,651	0	34,938	2,706	0	2,706	12,140	83,280	-	1,717	77,137
1997	3,132	27,483	-	867	31,482	4,680	24,326	0	29,006	787	0	787	8,599	51,809	-	867	61,275
1998	3,163	0	-	0	3,163	4,482	0	0	4,482	1,561	0	1,561	9,206	0	-	0	9,206
5 Year Average																	
1993-1997	4,927	28,091	-	741	33,759	4,106	28,982	0	33,067	1,495	0	1,495	10,528	57,053	-	741	68,322
10 Year Average																	
1988-1997	4,951	34,458	-	1,251	40,668	5,834	41,392	56	47,281	1,528	3,035	4,563	12,313	78,884	-	1,306	92,511

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Year	District 4				District 5				District 6						Upper Yukon Area Subtotals						
	Subsistence ^c	Commercial	Related ^d	Total	Subsistence ^c	Commercial	Related ^d	Personal Use	Total	Subsistence ^c	Commercial	Related ^d	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial	Related	Personal Use	ADF&G Test Fish	Total
1961																0	0			0	
1962																0	0			0	
1963																0	0			0	
1964																0	0			0	
1965																381	0			381	
1966																0	0			0	
1967																0	0			0	
1968																0	0			0	
1969																722	0			722	
1970																1,146	0			1,146	
1971																1,061	0			1,061	
1972																1,254	0			1,254	
1973																13,003	0			13,003	
1974		9,213	0	9,213		23,551	0		23,551		25,884	0			26,884	59,648	0			59,648	
1975		13,666	0	13,666		27,212	0		27,212		18,692	0			18,692	59,570	0			59,570	
1976		1,742	0	1,742		5,387	0		5,387		17,948	0			17,948	25,077	0			25,077	
1977		13,980	0	13,980		25,730	0		25,730		18,673	0			18,673	58,383	0			58,383	
1978	8,931	10,998	1,721	21,640	46,485	21,016	5,220		72,721	26,870	13,259	3,687			43,816	82,286	45,263	10,628		138,177	
1979	34,697	48,899	3,199	86,795	102,695	47,459	8,097		158,251	44,596	34,185	7,170			85,951	181,888	130,543	18,466		330,997	
1980	19,328	27,976	4,347	51,651	75,861	41,771	605		118,237	50,260	19,452	66			69,780	145,449	89,201	5,020		239,670	
1981	18,662	12,082	1,311	32,055	104,612	86,620	6,955		198,187	23,513	25,989	3,019			52,621	146,887	124,691	11,285		282,863	
1982	20,152	3,894	167	24,213	71,786	13,593	42		85,421	18,968	6,820	596			26,384	110,906	24,307	805		136,018	
1983	32,246	4,482	1,963	38,691	105,103	43,993	0		149,096	29,073	34,089	3,101			66,263	166,422	82,564	5,084		254,050	
1984	28,937	7,625	2,215	38,777	98,376	24,060	57		122,493	22,670	20,564	56			43,290	149,963	52,249	2,328		204,560	
1985	22,750	24,452	2,525	49,727	117,125	25,338	0		142,463	36,963	42,352	0			79,315	176,838	92,142	2,525		271,505	
1986	26,128	2,045	0	28,171	87,729	22,053	395		110,177	24,973	1,892	182			27,047	138,828	25,990	577		165,395	
1987	41,467	0	0	41,467	141,335	0	0	15,750	157,085	124,587	0	0	3,316		127,903	307,389	0	0	19,066	326,455	
1988	16,958	15,662	1,421	34,041	84,209	16,989	0	1,762	102,960	34,597	21,844	1,806	2,114	27,008	87,369	135,764	54,495	3,227	3,876	27,008	224,370
1989	24,540	11,776	3,407	39,723	112,001	18,215	3,989	3,294	137,499	58,654	49,090	7,353	1,770	16,984	133,851	195,195	79,081	14,748	5,064	16,984	311,073
1990	19,241	4,989	3,177	27,407	90,513	7,778	1,198	3,723	103,212	44,568	43,182	7,793	1,393	7,060	103,996	154,322	55,949	12,168	5,116	7,060	234,615
1991	20,875	3,737	2,354	26,966	74,002	27,355	4,759	-	106,116	40,469	28,195	16,253	0	1,385	86,302	135,346	59,287	23,366	0	1,385	219,384
1992	21,232	0	0	21,232	45,701	0	0	-	45,701	25,713	15,721	3,301	0	1,407	46,142	92,646	15,721	3,301	0	1,407	113,075
1993	10,832	0	0	10,832	43,764	0	0	-	43,764	9,853	0	0	163	0	10,016	64,449	0	0	163	0	64,612
1994	13,325	0	0	13,325	66,396	3,630	0	-	70,026	33,597	1	4,368	0	0	37,966	113,318	3,631	4,368	0	0	121,317
1995	14,057	2,924	5,807	22,788	57,594	9,778	20,255	-	87,627	49,168	67,855	6,262	883	0	124,148	120,819	80,557	32,324	863	0	234,563
1996	16,786	2,918	0	19,704	63,473	11,878	9,980	-	85,331	36,467	10,266	7,308	356	0	54,397	116,726	25,062	17,288	356	0	159,432
1997	11,734	2,458	0	14,192	55,258	2,446	1,474	-	59,178	19,550	0	0	284		19,834	86,542	4,904	1,474	284	0	93,204
1998	7,898	0	0	7,898	31,393	0	0	-	31,393	14,370	0	0	2	0	14,372	53,661	0	0	2	0	53,663
5 Year Average 1993-1997	13,347	1,660	1,161	16,168	57,297	5,546	6,342	-	69,185	29,727	15,624	3,588	333	0	49,272	100,371	22,831	11,091	333	0	134,626
10 Year Average 1988-1997	16,958	4,446	1,617	23,021	69,291	9,807	4,166	-	84,141	35,264	23,615	5,444	694	5,983	70,402	121,513	37,869	11,227	1,572	5,384	177,565

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Year	Alaska Yukon Area Totals						Canadian Totals					Yukon River Drainage (Alaska/Canada) Totals					
	Subsistence	Commercial	Commercial		Test Fish	Total	Old Grow	Mainstem Yukon River			Total	Subsistence ^a	Commercial	Commercial		Test Fish	Total
			Related	Use				Aboriginal	Aboriginal	Domestic				Related	Use		
1961	101,772	42,461	0			144,233	2,000	3,800		3,276	7,076	9,076	107,572	45,737	0		153,309
1962	87,285	53,116	0			140,401	2,000	6,500		936	7,436	9,436	95,785	54,052	0		149,837
1963	99,031	0	0			99,031	20,000	5,500		2,196	7,696	27,696	124,531	2,196	0		126,727
1964	120,360	8,347	0			128,707	6,058	4,200		1,929	6,129	12,187	130,618	10,276	0		140,894
1965	112,283	23,317	0			135,600	7,535	2,183		2,071	4,254	11,789	122,001	25,388	0		147,389
1966	51,503	71,045	0			122,548	8,605	1,430		3,157	4,587	13,192	81,538	74,202	0		135,740
1967	60,744	38,274	0			107,018	11,768	1,850		3,343	5,193	16,961	82,362	41,617	0		123,979
1968	44,827	52,925	0			97,552	10,000	1,180		453	1,633	11,633	55,807	53,378	0		109,185
1969	52,063	131,310	0			183,373	3,377	2,120		2,279	4,399	7,776	57,580	133,589	0		191,149
1970	55,501	209,595	0			265,096	620	612		2,479	3,091	3,711	56,733	212,074	0		268,807
1971	57,162	189,594	0			246,756	15,000	150		1,761	1,911	16,911	72,312	191,355	0		263,667
1972	36,002	152,176	0			188,178	5,000	0		2,532	2,532	7,532	41,002	154,708	0		195,710
1973	53,670	232,090	0			285,760	6,200	1,129		2,806	3,935	10,135	60,899	234,898	0		295,895
1974	93,776	289,776	0			383,552	7,000	1,636	466	2,544	4,646	11,646	102,878	292,320	0		395,198
1975	86,591	275,009	0			361,600	11,000	2,500	4,600	2,500	9,600	20,800	104,691	277,509	0		382,200
1976	72,327	156,390	0			228,717	3,100	100	1,000	1,000	2,100	5,200	76,527	157,390	0		233,917
1977	82,771	257,966	0			340,737	5,560	1,430	1,499	3,990	6,919	12,479	91,260	261,976	0		353,236
1978	84,239	236,363	10,628			331,250	5,000	482	728	3,356	4,566	9,566	90,449	239,739	10,628		340,816
1979	214,881	359,946	18,466			593,293		11,000	2,000	9,084	22,084	22,084	227,881	369,030	18,466		615,377
1980	167,837	293,430	5,020			466,087	6,000	3,218	4,000	9,000	16,218	22,218	180,855	302,430	5,020		488,305
1981	177,240	466,451	11,285			654,976	3,000	2,410	1,611	15,260	19,281	22,281	184,261	481,711	11,285		677,257
1982	132,092	224,167	805			357,064	1,000	3,096	683	11,312	15,091	16,091	136,871	235,499	805		373,175
1983	167,854	302,598	5,064			495,526	2,000	1,200	300	25,990	27,490	29,490	191,364	328,588	5,064		525,016
1984	172,495	208,232	2,328			383,055	4,000	1,800	535	22,932	25,267	29,267	178,830	231,164	2,328		412,322
1985	203,947	267,744	2,525			474,216	3,500	1,740	279	35,746	37,765	41,265	209,466	303,490	2,525		515,481
1986	163,466	139,442	577			303,485	657	2,200	222	11,464	13,886	14,543	166,545	150,906	577		318,028
1987	342,597	0	0	19,066		361,663	135	3,622	132	40,591	44,345	44,480	346,488	40,591	0	19,066	406,143
1988	151,586	133,320	3,227	3,881	27,663	319,677	1,071	1,882	349	30,263	32,494	33,565	154,888	163,583	3,227	3,881	353,242
1989	211,147	266,206	14,749	5,082	20,973	518,157	2,909	2,462	100	17,549	20,111	23,020	216,618	283,755	14,749	5,082	541,177
1990	167,900	122,010	12,168	5,176	9,224	316,478	2,410	3,675	0	27,537	31,212	33,622	173,985	149,547	12,168	5,176	350,100
1991	145,524	230,852	23,366	0	3,936	403,678	1,576	2,438	0	31,404	33,842	35,418	149,538	262,256	23,366	0	439,096
1992	107,602	15,721	3,301	0	1,407	128,031	1,935	304	0	18,576	18,880	20,815	109,841	34,297	3,301	0	148,846
1993	76,762	0	0	163	0	76,925	1,668	4,860	0	7,762	12,422	14,090	83,090	7,762	0	163	91,015
1994	123,218	3,631	4,368	0	0	131,217	2,654	5,319	0	30,035	35,354	38,008	131,191	33,666	4,368	0	169,225
1995	130,506	250,733	32,324	863	1,121	415,547	5,489	1,099	0	39,012	40,111	45,600	137,094	289,745	32,324	863	461,147
1996	128,866	88,342	17,288	356	1,717	236,589	3,025	1,260	0	20,069	21,329	24,354	133,151	108,411	17,288	356	260,923
1997	95,141	56,713	1,474	284	867	154,479	6,294	1,218	0	8,068	9,286	15,580	102,653	64,781	1,474	284	170,059
1998	62,667	0	0	2	0	62,669	6,159	1,745	0	0	1,745	7,904	70,771	0	0	2	70,773
5 Year Average																	
1993-1997	110,899	79,884	11,091	333	741	202,947	3,826	2,711	0	20,989	23,700	27,526	117,436	100,873	11,091	333	230,474
10 Year Average																	
1988-1997	133,825	116,753	11,227	1,581	6,691	270,076	2,903	2,432	45	23,028	25,504	28,407	139,205	139,780	11,227	1,581	298,483

a Subsistence harvest estimates not available by district until 1978. Subsistence harvests prior to 1977 were estimated because catches of salmon other than chinook salmon were not differentiated by species. Minimum estimates of fall chum subsistence catches for 1961-1978 because surveys were conducted prior to the end of the fishing season.

b Includes department test fish sales prior to 1988.

c From 1978 through 1988, the commercial related harvest was subtracted from the subsistence harvest in Districts 4, 5 and 6 because it was assumed that this harvest was included in the reported subsistence harvest during that time period. Beginning in 1989, subsistence surveys attempted to document subsistence only fishing catches and commercial related use separately.

d In Districts 4, 5 and 6, commercial related refers to the estimated number of females harvested to produce roe sold.

f Includes an estimated 95,768 fall chum salmon illegally sold in District 5.

g Includes an estimated 119,168 fall chum salmon illegally sold in District 6.

h Includes Alaskan subsistence harvest and Canadian Domestic and Aboriginal harvests.

Appendix A.20. Coho salmon total utilization in numbers of fish by district, area and country, Yukon River drainage, 1961-1998. ^a

Year	District 1					District 2					District 3			Lower Yukon Area Subtotals				
	Subsistence	Commercial ^b	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial ^b	ADF&G Test Fish	Total	Subsistence	Commercial	Total	Subsistence	Commercial	Personal Use	ADF&G Test Fish	Total	
1961		2,855			2,855		0		0		0	0		2,855			2,855	
1962		22,926			22,926		0		0		0	0		22,926			22,926	
1963		5,572			5,572		0		0		0	0		5,572			5,572	
1964		2,446			2,446		0		0		0	0		2,446			2,446	
1965		350			350		0		0		0	0		350			350	
1966		19,254			19,254		0		0		0	0		19,254			19,254	
1967		9,925			9,925		0		0		1,122	1,122		11,047			11,047	
1968		13,153			13,153		0		0		150	150		13,303			13,303	
1969		13,989			13,989		0		0		1,009	1,009		14,998			14,998	
1970		12,632			12,632		0		0		0	0		12,632			12,632	
1971		12,165			12,165		0		0		0	0		12,165			12,165	
1972		21,705			21,705		506		506		0	0		22,211			22,211	
1973		34,860			34,860		1,781		1,781		0	0		36,641			36,641	
1974		13,713			13,713		176		176		0	0		13,889			13,889	
1975		2,288			2,288		200		200		0	0		2,488			2,488	
1976		4,064			4,064		17		17		0	0		4,081			4,081	
1977		31,720			31,720		5,319		5,319		538	538		37,577			37,577	
1978	1,142	16,460			17,602	598	5,835		6,433	223	758	981	1,963	23,053			25,016	
1979	3,184	11,369			14,553	1,132	2,850		3,982	74	0	74	4,390	14,219			18,609	
1980	1,808	4,829			6,637	4,801	2,660		7,461	91	0	91	6,700	7,489			14,189	
1981	3,769	13,129			16,898	3,736	7,848		11,584	510	419	929	8,015	21,396			29,411	
1982	11,192	15,115			26,307	10,229	14,179		24,408	675	87	762	22,096	29,381			51,477	
1983	3,590	4,595			8,185	6,072	2,557		8,629	917	0	917	10,579	7,152			17,731	
1984	6,095	29,472			35,567	7,066	43,064		50,130	740	621	1,361	13,901	73,157			87,058	
1985	3,246	27,676			30,922	4,834	17,125		21,959	376	171	547	8,456	44,972			53,428	
1986	2,725	24,824			27,549	9,140	21,197		30,337	954	793	1,747	12,819	46,814			59,633	
1987	6,396	0	0		6,396	6,894	0		6,894	754	0	754	14,044	0	0		14,044	
1988	4,389	36,028	0	407	40,824	7,104	34,758	18	41,880	1,667	1,419	3,086	13,160	72,205	0	425	85,790	
1989	5,077	22,987	59	1,685	29,808	5,039	38,402	120	43,561	537	3,988	4,525	10,653	65,377	59	1,805	77,894	
1990	3,301	12,160	8	1,194	16,663	6,344	16,405	30	22,779	1,026	918	1,944	10,671	29,483	8	1,224	41,386	
1991	1,808	54,095	-	2,094	57,997	3,297	40,898	86	44,281	1,340	1,905	3,245	6,445	96,898	-	2,180	105,523	
1992	5,426	0	-	0	5,426	6,587	0	0	6,587	1,549	0	1,549	13,562	0	-	0	13,562	
1993	2,343	0	-	0	2,343	1,695	0	0	1,695	279	0	279	4,317	0	-	0	4,317	
1994	3,272	0	-	0	3,272	3,881	0	0	3,881	363	0	363	7,516	0	-	0	7,516	
1995	2,251	21,625	-	193	24,069	2,142	18,488	0	20,630	891	0	891	5,284	40,113	-	193	45,590	
1996	2,445	27,705	-	1,728	31,878	3,475	20,974	0	24,449	444	0	444	6,364	48,679	-	1,728	56,771	
1997	1,823	21,450	-	498	23,771	2,424	13,056	0	15,480	766	0	766	5,013	34,506	-	498	40,017	
1998	2,171	0	-	0	2,171	2,297	1	0	2,298	400	0	400	4,868	1	-	0	4,869	
5 Year Average																		
1993-1997	2,427	14,156	-	484	17,067	2,723	10,504	0	13,227	549	0	549	5,699	24,660	-	484	30,842	
10 Year Average																		
1988-1997	3,214	19,605	-	780	23,605	4,199	18,298	25	22,522	886	823	1,709	8,299	38,726	-	805	47,837	

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Year	District 4				District 5					District 6						Upper Yukon Area Subtotals					
	Subsistence	Commercial	Related ^c	Total	Subsistence	Commercial	Related ^c	Personal Use	Total	Subsistence	Commercial	Related ^c	Personal Use	ADF&G Test Fish	Total	Subsistence	Commercial	Related ^c	Personal Use	ADF&G Test Fish	Total
1961																					
1962																					
1963																					
1964																					
1965																					
1966																					
1967																					
1968																					
1969																	95	0			95
1970																	556	0			556
1971																	38	0			38
1972																	22	0			22
1973																	0	0			0
1974		0	0			1,409	0		1,409		1,479	0			1,479		2,888	0			2,888
1975		0	0			5	0		5		53	0			53		58	0			58
1976		0	0			0	0		0		1,103	0			1,103		1,103	0			1,103
1977		0	0			2	0		2		1,284	0			1,284		1,284	0			1,284
1978	145	32	0	177	970	1	0		971	4,709	3,086	0			7,775	5,824	3,099	0			8,923
1979	197	155	0	352	595	0	0		595	4,612	2,791	0			7,403	5,404	2,946	0			8,350
1980	7,734	30	0	7,764	561	0	0		561	5,163	1,226	0			6,389	13,458	1,256	0			14,714
1981	2,239	0	0	2,239	1,713	0	0		1,713	9,261	2,284	0			11,545	13,213	2,284	0			15,497
1982	2,952	15	0	2,967	3,428	0	0		3,428	7,418	7,780	0			15,198	13,798	7,795	0			21,593
1983	3,946	0	0	3,946	2,448	0	0		2,448	5,932	5,168	0			13,100	13,326	5,168	0			19,494
1984	2,867	1,095	0	3,962	17,467	0	0		17,467	14,785	7,568	0			22,473	35,119	8,783	0			43,902
1985	3,949	938	0	4,887	8,098	0	0		8,098	11,761	11,762	0			23,523	23,808	12,700	0			36,508
1986	2,458	0	0	2,458	5,870	0	0		5,870	13,321	441	0			13,762	21,649	441	0			22,090
1987	3,479	0	0	3,479	11,842 ^d	0	0	58	11,900	53,006 ^f	0	0	2,455		55,471	68,327	0	0	2,523		70,850
1988	4,714	2	0	4,716	19,755	8	0	103	19,866	30,201	13,972	0	1,147	13,295	58,615	54,670	13,982	0	1,250	13,295	83,197
1989	4,030	3	0	4,033	7,187	84	0	82	7,353	18,841	16,084	0	731	2,140	37,796	30,058	16,171	0	813	2,140	49,182
1990	3,814	0	0	3,814	11,562	0	0	18	11,580	17,813	11,549	3,255	1,155	1,426	34,998	32,789	11,549	3,255	1,173	1,426	50,192
1991	4,451	14	0	4,465	4,931	0	0	-	4,931	21,561	6,268	3,506	0	791	32,126	30,943	6,262	3,506	0	791	41,522
1992	8,429	0	0	8,429	12,376	0	0	-	12,376	17,554	8,556	1,423	0	1,629	27,162	38,359	6,556	1,423	0	1,629	47,967
1993	1,167	0	0	1,167	5,984	0	0	-	5,984	4,304	0	0	0	0	4,304	11,455	0	0	0	0	11,455
1994	3,515	0	0	3,515	4,174	0	0	-	4,174	29,389	120	4,331	0	0	33,840	37,078	120	4,331	0	0	41,529
1995	1,934	0	0	1,934	2,205	0	0	-	2,205	18,802	5,826	1,074	417	0	26,119	22,941	5,826	1,074	417	0	30,258
1996	2,467	161	0	2,628	6,588	0	0	-	6,588	14,893	3,803	3,339	198	0	22,233	23,948	3,964	3,339	198	0	31,449
1997	3,754	814	0	4,568	3,583	0	0	-	3,583	11,595	0	0	350	0	11,945	18,932	814	0	350	0	20,096
1998	2,593	0	0	2,593	2,839	0	0	-	2,839	7,472	0	0	9	0	7,481	12,904	0	0	9	0	12,913
5 Year Average																					
1993-1997	2,567	195	0	2,762	4,507	0	0	-	4,507	15,797	1,950	1,749	193	0	19,688	22,871	2,145	1,749	193	0	26,957
10 Year Average																					
1988-1997	3,808	99	0	3,907	7,835	9	0	-	7,864	18,475	6,418	1,693	400	1,928	28,914	30,117	6,526	1,693	420	1,928	40,685

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Year	Alaska Yukon Area Totals							Canadian Totals					Yukon River Drainage (Alaska/Canada) Totals							
	Subsistence	Commercial	Commercial	Personal	ADF&G	Sport	Total	Old Crow	Mainstem Yukon River			Total	Subsistence ^h	Commercial	Commercial	Personal	ADF&G	Sport	Total	
			Related ^c	Use	Test Fish	Fish ^d			Aboriginal	Aboriginal	Domestic				Commercial	Related ^c	Use	Test Fish		Fish
1961	9,192	2,855	0				12,047						9,192	2,855	0				12,047	
1962	9,480	22,926	0				32,406						9,480	22,926	0				32,406	
1963	27,699	5,572	0				33,271						27,699	5,572	0				33,271	
1964	12,187	2,446	0				14,633						12,187	2,446	0				14,633	
1965	11,789	350	0				12,139						11,789	350	0				12,139	
1966	13,192	19,254	0				32,446						13,192	19,254	0				32,446	
1967	17,164	11,047	0				28,211						17,164	11,047	0				28,211	
1968	11,613	13,303	0				24,916						11,613	13,303	0				24,916	
1969	7,776	15,093	0				22,869						7,776	15,093	0				22,869	
1970	3,966	13,188	0				17,154						3,966	13,188	0				17,154	
1971	16,912	12,203	0				29,115						16,912	12,203	0				29,115	
1972	7,532	22,233	0				29,765						7,532	22,233	0				29,765	
1973	10,236	36,641	0				46,877						10,236	36,641	0				46,877	
1974	11,646	16,777	0				28,423						11,646	16,777	0				28,423	
1975	20,708	2,546	0				23,254						20,708	2,546	0				23,254	
1976	5,241	5,184	0				10,425						5,241	5,184	0				10,425	
1977	16,333	38,863	0			112	55,308						16,333	38,863	0			112	55,308	
1978	7,787	26,152	0			302	34,241						7,787	26,152	0			302	34,241	
1979	9,794	17,165	0			50	27,009						9,794	17,165	0			50	27,009	
1980	20,158	8,745	0			67	28,970	1,500			0	1,500	21,658	8,745	0			67	30,470	
1981	21,228	23,680	0			45	44,953	500			0	500	21,728	23,680	0			45	45,453	
1982	35,894	37,176	0			97	73,167				0	0	35,894	37,176	0			97	73,167	
1983	23,905	13,320	0			199	37,424				0	0	23,905	13,320	0			199	37,424	
1984	49,020	81,940	0			831	131,791	500			0	500	49,520	81,940	0			831	132,291	
1985	32,264	57,672	0			808	90,744	250			0	250	32,514	57,672	0			808	90,994	
1986	34,468	47,255	0			1,535	83,258	300			0	300	34,768	47,255	0			1,535	83,558	
1987	82,371	0	0	2,523		1,292	86,186	306			0	306	82,677	0	0	2,523		1,292	86,492	
1988	67,830	86,187	0	1,250	13,720	2,420	171,407	350			0	350	68,180	86,187	0	1,250	13,720	2,420	171,757	
1989	40,711	81,548	0	872	3,945	1,811	128,887	470			0	470	41,181	81,548	0	872	3,945	1,811	129,357	
1990	43,460	41,032	3,255	1,181	2,650	1,947	93,525	680			0	680	44,140	41,032	3,255	1,181	2,650	1,947	94,205	
1991	37,388	103,180	3,506	0	2,971	2,775	149,820	235			0	235	37,623	103,180	3,506	0	2,971	2,775	150,055	
1992	51,921	6,556	1,423	0	1,629	1,666	63,195	495			0	495	52,416	6,556	1,423	0	1,629	1,666	63,690	
1993	15,772	0	0	0	0	897	16,669	60			0	60	15,832	0	0	0	0	897	16,729	
1994	44,594	120	4,331	0	0	2,174	51,219	332			2	334	44,926	122	4,331	0	0	2,174	51,553	
1995	28,225	45,939	1,074	417	193	1,278	77,128	509			0	509	28,734	45,939	1,074	417	193	1,278	77,635	
1996	30,312	52,643	3,339	198	1,728	1,588	89,808	41			0	41	30,353	52,643	3,339	198	1,728	1,588	89,849	
1997	23,945	35,320	0	350	498	1,470	61,583	298			2	300	24,243	35,322	0	350	498	1,470	61,883	
1998	17,772	1	0	9	0		17,782	214			0	214	17,986	1	0	9	0	0	17,996	
5 Year Average																				
1993-1997	28,570	26,804	1,749	193	484	1,481	59,281	248			1	249	28,818	26,805	1,749	193	484	1,481	59,530	
10 Year Average																				
1988-1997	38,416	45,253	1,693	427	2,733	1,803	90,324	347			0	347	38,763	45,253	1,693	427	2,733	1,803	90,671	

a Subsistence harvest estimates not available by district until 1978. Subsistence harvests prior to 1977 were estimated because catches of salmon other than chinook salmon were not differentiated by species.

Minimum estimates of coho subsistence catches for 1961-1978 because surveys were conducted prior to the end of the fishing season. ADF&G test fish is the number of fish sold by test fisheries.

b Includes department test fish sales prior to 1988.

c In Districts 4, 5 and 6, commercial related refers to the estimated number of females harvested to produce roe sold.

d Includes an estimated 5,015 coho salmon illegally sold in District 5.

f Includes an estimated 31,276 coho salmon illegally sold in District 6.

g Estimated sport fish harvest for Alaskan portion of the Yukon River drainage. A majority of the sport fish harvest occurs in the Tanana River drainage, District 6.

h Includes Alaskan subsistence harvest and Canadian Aboriginal harvest.

Appendix A.21. Percent age composition of combined commercial and subsistence salmon harvest by species, Yukon River drainage, 1982-1998. ^a

Species	Year	Sample Size	Age In Years (Percent of Total)						Total ^b
			3	4	5	6	7	8	
Chinook Salmon	1982	3,795	0.2	6.8	18.5	58.3	15.9	0.3	100.0
	1983	3,801	0.0	6.6	21.0	62.9	9.4	0.0	100.0
	1984	3,700	0.0	3.7	27.0	56.0	13.1	0.1	100.0
	1985	4,567	0.1	5.7	13.2	69.4	11.3	0.3	100.0
	1986	5,785	0.3	3.9	27.2	42.8	25.1	0.6	100.0
	1987	5,300	0.0	4.2	8.4	72.5	14.5	0.3	100.0
	1988	5,108	0.1	14.8	22.8	31.5	29.4	1.4	100.0
	1989	3,901	0.5	7.2	30.3	51.1	10.2	0.6	99.9
	1990	3,416	0.0	17.2	26.9	49.4	6.3	0.2	100.0
	1991	3,879	0.0	5.8	45.1	42.6	6.4	0.1	100.0
	1992	3,772	0.1	8.1	20.1	68.6	3.1	0.0	100.0
	1993	4,034	0.2	15.8	25.4	50.5	8.0	0.0	100.0
	1994	3,692	0.3	4.1	47.2	44.5	3.8	0.0	99.9
	1995	5,559	0.0	7.8	13.7	74.7	3.6	0.2	100.0
	1996	5,861	0.0	2.4	44.0	35.6	17.9	0.2	100.1
	1997	5,134	0.0	7.5	17.8	70.5	4.2	0.1	100.1
	1998	3,122	0.7	5.2	55.1	31.4	7.6	0.0	100.0
5 Year Average 1993 to 1997		4,856	0.1	7.5	29.6	55.2	7.5	0.1	100.0
Summer Chum Salmon	1982	3,419	2.0	61.2	34.4	2.4			100.0
	1983	4,110	1.0	53.8	44.4	0.8			100.0
	1984	2,722	2.0	73.7	23.9	0.5			100.0
	1985	2,472	1.4	68.6	29.2	0.8			100.0
	1986	3,473	0.1	29.1	69.8	1.0			100.0
	1987	2,184	0.4	60.8	31.8	6.9			100.0
	1988	5,112	0.0	70.1	29.1	0.8			100.0
	1989	3,778	0.4	38.7	60.5	0.4			100.0
	1990	3,155	0.4	38.3	58.9	2.4			100.0
	1991	5,015	1.3	48.0	49.8	0.9			100.0
	1992	4,303	0.2	31.0	65.0	3.8			100.0
	1993	2,011	0.4	47.5	47.7	4.5			100.1
	1994	3,820	0.1	51.3	46.6	2.0			100.0
	1995	4,740	0.6	51.9	45.3	2.1			99.9
	1996	3,863	0.4	46.2	48.8	4.5	0.1		100.0
	1997	3,195	0.2	29.0	67.2	3.6	0.0		100.0
	1998	1,147	0.3	62.8	34.2	2.7			100.0
5 Year Average 1993 to 1997		3,526	0.3	45.2	51.1	3.3	0.1		100.0

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Species	Year	Sample Size	Age In Years (Percent of Total)					Total ^b
			3	4	5	6	7	
Fall	1982	2,918	6.5	58.6	34.5	0.3		100.0
Chum	1983	1,735	0.7	91.4	8.0	0.0		100.0
Salmon	1984	1,902	6.6	55.6	37.5	0.4		100.0
	1985	2,801	5.2	83.4	11.0	0.4		100.0
	1986	1,715	7.4	89.6	2.5	0.5		100.0
	1987	1,513	5.0	77.1	17.5	0.4		100.0
	1988	4,030	4.1	45.7	46.6	3.5		99.9
	1989	4,939	1.0	87.0	11.8	0.2		100.0
	1990	2,351	2.8	74.9	21.7	0.6		100.0
	1991	5,314	2.7	75.4	21.7	0.2		100.0
	1992	3,069	1.2	45.9	51.8	1.1		100.0
	1993	1,616	0.1	62.8	35.2	1.8		99.9
	1994	1,295	2.4	66.4	31.1	0.1		100.0
	1995	1,731	0.8	59.2	37.4	2.6		100.0
	1996	1,391	0.3	52.3	43.9	3.5		100.0
	1997	1,245	0.3	57.2	41.6	0.9		100.0
	1998 ^c	0	-	-	-	-		-
<hr/>								
5 Year Average 1993 to 1997		1,456	0.8	59.6	37.8	1.8		100.0
<hr/>								
Coho	1982	320	4.1	87.3	8.6			100.0
Salmon	1983	121	4.1	91.7	4.1			100.0
	1984	619	12.9	73.7	13.4			100.0
	1985	462	14.1	76.3	9.6			100.0
	1986	491	2.2	88.6	9.2			100.0
	1987	0	-	-	-			-
	1988	1,091	12.2	85.5	2.3			100.0
	1989	749	20.0	74.5	5.5			100.0
	1990	428	28.9	67.1	3.9			99.9
	1991	615	8.3	91.6	0.1			100.0
	1992	920	24.1	74.4	1.6			100.1
	1993	522	15.5	83.5	1.0			100.0
	1994	752	22.9	76.2	0.9			100.0
	1995	664	41.7	58.0	0.3			100.0
	1996	944	10.4	87.2	2.4			100.0
	1997	516	6.1	92.0	2.0			100.1
	1998 ^c	0	-	-	-			-
<hr/>								
5 Year Average 1993 to 1997		680	19.3	79.4	1.3			100.0

a Age composition estimated from samples collected from each gear type, by district and fishery, or from samples from adjacent fisheries and/or test fisheries of the same gear type.

Fisheries for which no appropriate samples were available were not apportioned to age.

b Total maynot be equal to100% due to rounding errors.

c No commercial fishing occurred and subsistence harvests for fall chum and coho salmon were not sampled in 1998, therefore no information is available.

Appendix A.22. Chinook salmon harvest proportions by origin, Yukon River drainage, 1994-1998. ^a

Year	Lower Run Stocks ^b (U.S)	Middle Run Stocks ^c (U.S)	Upper Run Stocks (Canada)
1992	16	22	62
1993	22	25	53
1994	18	21	60
1995	18	22	60
1996	21	10	69
1997	26	17	57
1998 ^d	33	17	50
7-Year Average 1992-1998	22	19	59

a Based on analysis of chinook salmon scale growth characteristics, age composition, and geographic distribution of harvests and escapements.

b Lower Run stocks include tributary streams that drain the Andreafsky Hills and Kaltag Mountains between rivermiles 100 and 500.

c Middle Run stocks include the Upper Koyukuk River and Tanana River tributaries.

d Preliminary data.

Appendix A.23. Selected environmental and salmon catch information,
Yukon River drainage, 1961-1998.

Year	Average Nome April Air Temp. (° F)	Tanana River Nenana Ice Breakup	Iceout Yukon Delta Area	First Chinook Caught Yukon Delta Area ^a	First Summer Chum Caught Delta Area ^a	First District 1 Commercial period
1961	18	5/05	- ^b	6/05	- ^b	6/05
1962	18	5/12	6/10	6/07 ^c	- ^b	6/11
1963	18	5/05	5/29	- ^b	- ^b	6/03
1964	13	5/20	>6/12	- ^b	- ^b	6/15
1965	20	5/07	6/01	6/06	- ^b	6/07
1966	15	5/08	6/06	6/09	- ^b	6/10
1967	23	5/04	- ^b	5/20	5/30	6/02
1968	14	5/08	- ^b	- ^b	6/05	6/03
1969	22	4/28	5/25	5/26	6/02	6/02
1970	15	5/04	late May	6/06	6/05	6/06
1971	13	5/08	6/05	6/11	6/15	6/11
1972	12	5/10	6/03	6/09	6/11	6/09
1973	18	5/04	6/01	5/30 ^d	6/05	6/05
1974	21	5/06	late May	5/27	6/01	6/03
1975	13	5/10	6/01	6/01	6/13	6/09
1976	10	5/02	6/01	6/12	6/13	6/14
1977	9	5/06	6/01	6/09	6/11	6/11
1978	25	4/30	5/20	5/26	5/26	6/08
1979	26	4/30	5/20	5/24	5/28	6/04
1980	24	4/29	5/19	5/27 ^f	5/31	6/09
1981	24	4/30	5/18	5/25	5/28	6/05
1982	12	5/10	6/02	6/06	6/06	6/14
1983	25	4/29	5/21	5/25	5/30	6/09
1984	12	5/09	6/01	6/02 ^g	6/08	6/18
1985	1	5/11	6/05	6/14	6/16	6/24
1986	12	5/08	6/01	6/06	6/07	6/14 ^h
1987	19	5/05	5/31	5/31	6/04	6/15 ^h
1988	23	4/27	5/20	5/27	5/27	6/09 ^h
1989	25	5/01	5/31	5/29 ^k	6/03	6/13 ^h
1990	26	4/24	5/28	5/29	5/31	6/14
1991	25	5/01	5/24	5/29	5/29	6/13
1992	22 ^j	5/14	5/30 ^m	6/13	6/13	6/20
1993	28	4/23	5/19	5/26	5/28	6/14
1994	20	4/29	5/22	5/24	5/28	6/13
1995	26	4/26	5/18	5/24	5/26	6/12
1996	21	5/05	5/19	5/24	5/24	6/10
1997	27 ⁿ	4/30	5/15	5/22	5/25	6/11
1998	26	4/20	5/22	5/28	5/25	6/15

a Subsistence or test fishery.

b Information not available.

c Caught 6/09 Mt. Village, back calculated arrival date to mouth.

d Caught 6/03 Pilot Station, back calculated arrival date to mouth.

f Caught 5/23 Marshall, back calculated arrival date to mouth.

g Caught 6/05 Pitkas Point, back calculated arrival date to mouth.

h Special six inch maximum mesh size fishing period.

j Caught 6/01 St. Marys, back calculated arrival date to mouth.

k Average May air temperature was 8.2 degrees fahrenheit below normal.

m The mainstem Yukon River was ice free, but ice remained along the coast until June 10.

n Average April air temperature was 9 degrees fahrenheit above normal.

Appendix A.24. Total catch and estimated catch of Western Alaska (including Canadian Yukon River) chinook salmon (in thousands of fish) taken in Japanese high seas salmon gillnet fisheries and total catch of chinook salmon taken in foreign, joint-venture, and U.S. domestic trawl fisheries, 1964-1998.

Year	Japanese Mothership Gillnet		Japanese Landbased Driftnet		Japanese Total Gillnet		Bering Sea-Aleutian Area Trawl				Gulf of Alaska Trawl		
	Western Alaska		Western Alaska		Western Alaska		Joint Venture		U.S.	Total	Joint Venture/U.S.		Total
	Origin	Total	Origin	Total	Origin	Total	Foreign	Groundfish ^a	Domestic		Foreign	Groundfish ^b	
1964	179	410	40	208	219	618							
1965	106	185	20	102	126	287							
1966	108	208	22	118	130	326							
1967	71	128	22	115	93	243							
1968	244	362	18	97	262	459							
1969	367	554	17	88	384	642							
1970	312	437	28	148	340	585							
1971	132	206	27	139	159	345							
1972	189	281	20	107	209	368							
1973	58	119	31	165	87	284							
1974	208	361	36	188	244	549							
1975	108	182	20	137	128	299							
1976	117	285	42	201	159	488							
1977	55	93	31	148	86	239					4.8		4.8
1978	36	105	63	210	99	315	39.1			39.1			
1979	69	128	45	162	114	286	100.4			100.4	18.9	1.0	17.9
1980	416	704	22	160	438	864	113.1	1.9		115.0	31.6	0.2	31.8
1981	30	88	55	190	85	278	35.9	0.3		36.2	26.6	0.0	26.6
1982	45	107	41	165	86	272	13.9	1.7		15.6	4.7	1.2	5.9
1983	31	87	44	178	75	265	9.8	0.5		10.3	5.9	3.6	9.5
1984	36	82	21	92	57	174	9.5	1.7		11.2	11.1	63.2	74.3
1985	25	66	22	100	47	167	7.1	2.5	1.5	11.1	0.3	13.6	13.9
1986	24	60	20	76	44	137	1.0	4.8	3.4	9.2	0.0	20.8	20.8
1987	20	39	d	74	d	116	1.0	8.4	12.8	22.2		0.8	0.8
1988	23	26	d	47	d	73		5.8	24.7	30.3		0.1	0.1
1989	d	16	d	51	d	67		8.8	31.8	40.4		6.7	6.7
1990	-	-	-	-	d	23 ^f			14.0	14.0		14.8	14.8
1991	-	-	-	-	d	45 ^f			35.8	35.8		37.6	37.6
1992 ^g									37.4	37.4		16.0	16.0
1993 ^g									46.0	46.0		24.6	24.6
1994									44.4	44.4		13.6	13.6
1995									22.5	22.5		14.6	14.6
1996									63.2	63.2		15.8	15.8
1997									50.2	50.2		15.1	15.1
1998									59.0	59.0		16.9	16.9

a Joint-venture harvest reported through 1989 (fishery ended in 1990).

b Joint-venture harvest reported through 1988 when fishery ended. U.S. ground fish fishery harvest reported beginning in 1989.

c Species composition unknown.

d Information not available.

f Japanese mothership fishery converted to "nontraditional landbased salmon fishery".

g U.S. fishery entirely replaced directed foreign and joint-venture groundfish harvests.

Appendix A.25. List of emergency orders pertaining to the chinook and summer chum salmon fishery, Yukon Area, 1998.

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-LY-01-98	June 15	Opened the commercial salmon fishing season effective 6:00 p.m. Monday June 15, 1998 in District 1 of the Lower Yukon Area.	The first chinook salmon was caught by a subsistence fisherman on May 28 near Emmonak. The first chinook salmon was caught in a department test gillnet on May 29, 1998. Test fishing and subsistence catches of chinook salmon began increasing moderately on June 11. At this time, adequate numbers of chinook salmon are present in Districts 1 and 2 to provide for subsistence needs. Approximately 2 weeks of chinook salmon passage prior to June 15 should provide adequate escapement from this portion of the chinook salmon return. Chinook salmon run timing appears to be later than average. Summer chum salmon run timing also appears to be later than average.
3-S-LY-02-98	June 15	Established a 9-hour fishing period and allowed the taking of salmon for commercial purposes with unrestricted mesh size gillnets from 6:00 p.m. Monday June 15, 1998 until 3:00 a.m. Tuesday June 16, 1998 in District 1 of the Lower Yukon Area.	Adequate numbers of chinook salmon are present in Districts 1 and 2 to provide for subsistence needs. Approximately 2 weeks of chinook salmon passage will occur by June 15 and should provide adequate escapement from this portion of the chinook salmon return. Chinook salmon run timing appears to be later than average and most similar to the 1990 and 1994 runs.
3-S-LY-03-98	June 23	Established a 9-hour fishing period and allowed the taking of salmon for commercial purposes with unrestricted mesh size gillnets from 6:00 p.m. Tuesday June 23, 1998 until 3:00 a.m. Wednesday June 24, 1998 in District 1 of the Lower Yukon Area.	Test fishing and subsistence catches of chinook salmon increased moderately on June 11. Catches were low but steady from June 12 through June 18. The first commercial fishing period on June 15-16 in District 1 resulted in a very low harvest of 1,800 chinook and 400 chum salmon. Subsistence fishermen reported increased salmon catches from June 19 through June 22. The test fish CPUE through June 21 is 4.05 for chinook compared to an average of 14.37. The Pilot Station Sonar passage estimate to date is approximately 12,000 chinook and 46,000 chum salmon. Test fishing catches greatly increased on June 22. At this time, adequate numbers of chinook salmon are present in Districts 1 and 2 to provide for subsistence needs. Approximately 3 weeks of chinook salmon passage prior to June 23 should provide adequate escapement from this portion of the chinook salmon return. Chinook and summer chum salmon run timing appears to be later than average.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-LY-04-98	June 26	Opened the commercial salmon fishing season effective 6:00 p.m. Friday June 26, 1998 in District 2 of the Lower Yukon Area.	Test fishing and subsistence catches of chinook salmon increased moderately on June 11. Catches were low but steady from June 12 through June 18. Subsistence fishermen reported increased salmon catches from June 19 through June 22. Test fishing catches greatly increased on June 22 and June 23. The test fish CPUE through June 23 is 6.65 for chinook compared to an average of 16.17. The Pilot Station Sonar passage estimate to date is approximately 16,000 chinook and 104,000 chum salmon. At this time, adequate numbers of chinook salmon are present in Districts 1 and 2 to provide for subsistence needs. Approximately 3 weeks of chinook salmon passage prior to June 23 should provide adequate escapement from this portion of the chinook salmon return. Chinook salmon run timing appears to be later than average and most similar to the 1985 and 1992 runs. Summer chum salmon run timing also appears to be later than average.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-LY-05-98	June 26	Established a 9-hour fishing period and allowed the taking of salmon for commercial purposes with unrestricted mesh size gillnets from 6:00 p.m. Friday June 26, 1998 until 3:00 a.m. Saturday June 27, 1998 in District 2 of the Lower Yukon Area.	Test fishing and subsistence catches of chinook salmon increased moderately on June 11. Catches were low but steady from June 12 through June 18. The first commercial fishing period on June 15-16 in District 1 resulted in a very low harvest of 1,800 chinook and 400 chum salmon. No further commercial fishing was allowed until the second opening in District 1 on June 23 and 24, which resulted in a harvest of approximately 11,000 chinook salmon. Subsistence fishermen reported increased salmon catches from June 19 through June 22. Test fishing catches greatly increased on June 22 and June 23. The test fish CPUE through June 23 is 6.65 for chinook compared to an average of 16.17. The Pilot Station Sonar passage estimate to date is approximately 16,000 chinook and 104,000 chum salmon. At this time, adequate numbers of chinook salmon are present in Districts 1 and 2 to provide for subsistence needs. Approximately 3 weeks of chinook salmon passage prior to June 23 should provide adequate escapement from this portion of the chinook salmon return. Chinook salmon run timing appears to be later than average and most similar to the 1985 and 1992 runs. Summer chum salmon run timing also appears to be later than average. Age composition sampling has shown that as expected, the chinook run to date has been composed of fewer 6-year olds than usual.
3-S-LY-06-98	June 26	Opened the commercial salmon fishing season effective 6:00 p.m. Friday June 26, 1998 in that portion of District 3 downriver from the northern edge of the mouths of 7-Mile Slough and Portage Slough to the District 2 boundary line of the Lower Yukon Area.	Test fishing and subsistence catches of chinook salmon increased moderately on June 11. Catches were low but steady from June 12 through June 18. Subsistence fishermen reported increased salmon catches from June 19 through June 22. Test fishing catches greatly increased on June 22 and June 23. The test fish CPUE through June 23 is 6.65 for chinook compared to an average of 16.17. The Pilot Station Sonar passage estimate to date is approximately 16,000 chinook and 104,000 chum salmon. At this time, adequate numbers of chinook salmon are present in Districts 1 and 2 to provide for subsistence needs. Approximately 3 weeks of chinook salmon passage prior to June 23 should provide adequate escapement from this portion of the chinook salmon return. Chinook salmon run timing appears to be later than average and most similar to the 1985 and

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
			1992 runs. Summer chum salmon run timing also appears to be later than average.
3-S-LY-07-98	June 26	Established a 9-hour fishing period and allowed the taking of salmon for commercial purposes with unrestricted mesh size gillnets from 6:00 p.m. Friday June 26, 1998 until 3:00 a.m. Saturday June 27, 1998 in that portion of District 3 downriver from the northern edge of the mouths of 7-Mile Slough and Portage Slough to the District 2 boundary line of the Lower Yukon Area.	Test fishing and subsistence catches of chinook salmon increased moderately on June 11. Catches were low but steady from June 12 through June 18. The first commercial fishing period on June 15-16 in District 1 resulted in a very low harvest of 1,800 chinook and 400 chum salmon. No further commercial fishing was allowed until the second opening in District 1 on June 23 and 24, which resulted in a harvest of approximately 11,000 chinook salmon. Subsistence fishermen reported increased salmon catches from June 19 through June 22. Test fishing catches greatly increased on June 22 and June 23. The test fish CPUE through June 23 is 6.65 for chinook compared to an average of 16.17. The Pilot Station Sonar passage estimate to date is approximately 16,000 chinook and 104,000 chum salmon. At this time, adequate numbers of chinook salmon are present in Districts 1 and 2 to provide for subsistence needs. Approximately 3 weeks of chinook salmon passage prior to June 23 should provide adequate escapement from this portion of the chinook salmon return. Chinook salmon run timing appears to be later than average and most similar to the 1985 and 1992 runs. Summer chum salmon run timing also appears to be later than average.
3-S-LY-08-98	June 27	Established a 9-hour fishing period and allowed the taking of salmon for commercial purposes with unrestricted mesh size gillnets from 6:00 p.m. Saturday June 27, 1998 until 3:00 a.m. Sunday June 28, 1998 in District 1.	The Pilot Station Sonar passage estimate through June 25 is approximately 38,000 chinook and 223,000 chum salmon. The test fish CPUE through June 25 is 7.89 for chinook salmon compared to an average of 17.88. Chinook salmon run timing appears to be 9-10 days later than average and similar to the run timing in 1985 and 1992. Summer chum salmon run timing also appears to be later than average. The commercial harvest to date for Districts 1 and 2 combined is estimated to be 13,600 chinook and 4,000 chum salmon. The chinook salmon run is being assessed as late and below average in strength. Age composition sampling has shown that as expected, the chinook run to date has been composed of fewer 6-year olds than usual. However, the proportion of 7-year old chinook salmon is lower than expected.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-LY-09-98	July 1	Established a 3-hour fishing period and allowed the taking of salmon for commercial purposes only with gillnets of six inch or smaller mesh size from 10:00 p.m. Wednesday July 1, 1998 until 1:00 a.m. Thursday July 2, 1998 in District 1 of the Lower Yukon Area.	The Pilot Station Sonar passage estimate through June 30 is approximately 55,000 chinook and 417,000 chum salmon. The test fish CPUE through June 30 is 11.28 for chinook salmon compared to an average of 21.18. The commercial harvest to date for Districts 1 and 2 combined is estimated to be 28,000 chinook and 12,000 chum salmon. The chinook salmon run is being assessed as late and below average in strength. Summer chum salmon run timing appears to be later than average and similar to the run timing in 1987 and 1993.
3-S-LY-10-98	July 1	Allowed subsistence salmon fishing for an additional 8 hours in District 1 from 4:00 a.m. Wednesday July 1, 1998 until 12:00 p.m. Wednesday July 1, 1998.	Current subsistence fishing regulations close subsistence 18 hours before, during and 12 hours after a commercial fishing period. Due to the short notice of the commercial opening there was less than 18 hours between the announcement and the beginning of the period. To allow time for subsistence fishermen to remove their gear, it was warranted to allow an additional 8 hours of subsistence fishing.
3-S-LY-11-98	July 2	Established a 9-hour fishing period and allowed the taking of salmon for commercial purposes with unrestricted mesh size gillnets from 6:00 p.m. Thursday July 2, 1998 until 3:00 a.m. Friday July 3, 1998 in District 2 of the Lower Yukon Area.	The Pilot Station Sonar passage estimate through June 30 is approximately 55,000 chinook and 417,000 chum salmon. The test fish CPUE through June 30 is 11.28 for chinook salmon compared to an average of 21.18. Test fishing catches showed significant salmon abundance on June 22-23, and June 28-30. Chinook salmon run timing appears to be 9-10 days later than average and similar to the run timing in 1985 and 1992. Summer chum salmon run timing also appears to be later than average. The commercial harvest to date for Districts 1 and 2 combined is estimated to be 28,000 chinook and 12,000 chum salmon.
3-S-LY-12-98	July 7	Established a 6-hour fishing period and allowed the taking of salmon for commercial purposes only with unrestricted mesh size gillnets from 12:00 midnight Tuesday July 7, 1998 until 6:00 a.m. Wednesday July 3, 1998 in District 1 of the Lower Yukon Area.	The Pilot Station Sonar passage estimate through July 6 is approximately 93,500 chinook and 640,000 chum salmon. The test fish CPUE through July 6 is 14.09 for chinook compared to an average of 23.65. Test fishing catches of chinook salmon increased on July 5 and have remained steady. Because the Andreafsky River weir count of chinook salmon increased substantially on July 5-6, it is expected that a majority of the fish passing at this time are lower river stocks. The commercial harvest to date for Districts 1 and 2 combined is estimated to be 32,300 chinook and 24,000 chum salmon. The

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
			chinook salmon run is being assessed as late and poor in abundance.
3-S-LY-13-98	July 7	Allowed subsistence salmon fishing for an additional 9 hours in District 1 from 6:00 a.m. Tuesday July 7, 1998 until 3:00 p.m. Tuesday July 7, 1998.	Current subsistence fishing regulations close subsistence 18 hours before, during and 12 hours after a commercial fishing period. Due to the short notice of the commercial opening there was less than 18 hours between the announcement and the beginning of the period. To allow time for subsistence fishermen to remove their gear, it was warranted to allow an additional 9 hours of subsistence fishing.
3-S-LY-14-98	July 8	Established a 6-hour fishing period and allowed the taking of salmon for commercial purposes with unrestricted mesh size gillnets from 9:00 p.m. Wednesday July 8, 1998 until 3:00 a.m. Thursday July 9, 1998 in District 2 of the Lower Yukon Area.	The Pilot Station Sonar passage estimate through July 6 is approximately 93,000 chinook and 640,000 chum salmon. The test fish CPUE through July 6 is 14.09 for chinook compared to an average of 23.65. Because the Andreafsky River weir count of chinook salmon increased substantially on July 5-6, it is expected that a majority of the fish passing at this time are lower river stocks. Test fishing catches of chinook salmon increased on July 5 and have remained steady. The commercial harvest to date for Districts 1 and 2 combined is estimated to be 32,300 chinook and 24,000 chum salmon. The chinook salmon run is being assessed as late and poor in abundance.
3-S-UY-01-98	June 16	Established uninterrupted subsistence salmon fishing in Subdistricts 4-B and 4-C from Monday, June 16, 1998 until 24 hours prior to the opening of the commercial salmon fishing season.	Unlike adjacent districts or subdistricts, the subsistence salmon fishing schedule in Subdistricts 4-B and 4-C is altered on June 15 by regulation. Prior to June 15, subsistence fishermen are allowed uninterrupted subsistence salmon fishing time. On June 15, the Subdistricts 4-B and 4-C subsistence fishing schedule is altered by regulation to two 48-hour periods per week. Prior to 1990, this subsistence fishing schedule change coincided with the opening of the Subdistricts 4-B and 4-C commercial salmon fishing season. However, since 1990, the opening of the commercial salmon fishing season in Subdistricts 4-B and 4-C has been considerably later than June 15.
3-S-UY-02-98	July 15	Extended the Yukon Area Subdistrict 4-A subsistence drift gillnet salmon fishing season from July 15, 1998 through July 21, 1998.	The Yukon River chinook salmon migration timing appears to be later than normal. By regulations, subsistence drift gillnet fishing in Subdistrict 4-A closes on July 14. Allowing a later closing date for the Subdistrict 4-A drift gillnet fishery is not expected to adversely affect

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
			the king salmon escapement. The strength of the Yukon River king salmon return appears sufficient in numbers to provide for escapement and meet subsistence needs. Extending the Subdistrict 4-A subsistence drift gillnet season through July 21 is warranted to provide additional opportunities for subsistence fishermen to meet their king salmon subsistence needs.
3-S-UY-03-98	July 17	Opened the Yukon Area District 6 commercial salmon fishing season effective 6:00 p.m. Friday, July 17, 1998.	Based on department test net and preliminary commercial catch statistics in the lower portions of the Yukon River, the Yukon River chinook salmon run strength is poor with later than normal run timing. The chinook salmon return to the Tanana River appeared to be below average based the Nenana test fish wheel, subsistence and personal use catches, and the Chena and Salcha River tower escapement projects. The first chinook salmon was caught by a Tanana River subsistence fisherman on June 21, 1998. With initial subsistence chinook salmon needs being fulfilled, the early portion of the chinook salmon migration having passed through the fishery and allotted for escapement, and a harvestable surplus of chinook salmon available, a chinook salmon directed commercial fishery is now warranted in District 6.
3-S-UY-04-98	July 17	Established a 24-hour commercial fishing period and allowed the taking of salmon for commercial purposes in Yukon Area Subdistricts 6-A, 6-B and 6-C from 6:00 p.m. Friday, July 17, 1998 until 6:00 p.m. Saturday, July 18, 1998.	Based on department test net and preliminary commercial catch statistics in the lower portions of the Yukon River, the Yukon River chinook salmon run strength is poor with later than normal run timing. The chinook salmon return to the Tanana River appeared to be below average based the Nenana test fish wheel, subsistence and personal use catches, and the Chena and Salcha River tower escapement projects. The first chinook salmon was caught by a Tanana River subsistence fisherman on June 21, 1998. With initial subsistence chinook salmon needs being fulfilled, the early portion of the chinook salmon migration having passed through the fishery and allotted for escapement, and a harvestable surplus of chinook salmon available, a 24-hour commercial fishing period, is warranted in District 6. A 24-hour period is shorter in duration than the normal 42-hour periods.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-UY-05-98	July 23	Opened the Yukon Area Subdistricts 5-A, 5-B and 5-C commercial salmon fishing season effective 6:00 p.m. Thursday, July 23, 1998.	Based on department test net catches at the mouth of the Yukon River, Pilot Station sonar passage estimates, subsistence catch reports, commercial catch statistics in Districts 1 and 2, and preliminary escapement monitoring project information, the Yukon River chinook salmon run strength appears to poor. Chinook salmon have been present in Subdistricts 5-A, 5-B and 5-C since at least June 13 and should be well distributed throughout the area at this time. With initial subsistence salmon needs being fulfilled and late run timing indicating that a small harvestable commercial surplus of chinook salmon is available, a commercial fishery in Subdistricts 5-A, 5-B and 5-C is now warranted.
3-S-UY-06-98	July 23	Established an 18-hour commercial fishing period and allowed the taking of salmon for commercial purposes in Yukon Area Subdistricts 5-A, 5-B and 5-C from 6:00 p.m. Thursday, July 23, 1998 until 12:00 p.m. Friday, July 24, 1998.	Chinook salmon have been present in Subdistricts 5-A, 5-B and 5-C since at least June 13 and should be well distributed throughout the area at this time. An 18-hour commercial fishing period is of shorter duration than normal in Subdistricts 5-A, 5-B and 5-C. It is expected that this will be the only commercial fishing period in these subdistricts during the 1998 summer season and that the commercial harvest will below the lower end of the guideline harvest range of 2,400 to 2,800 fish. With initial subsistence salmon needs being fulfilled and late run timing indicating that a small harvestable commercial surplus of chinook salmon is available, an 18-hour commercial fishing period in Subdistricts 5-A, 5-B and 5-C is now warranted.
3-S-UY-07-98	July 26	Opened the Yukon Area Subdistrict 5-D commercial salmon fishing season effective 6:00 p.m. Sunday, July 26, 1998.	Based on department test net catches at the mouth of the Yukon River, Pilot Station sonar passage estimates, subsistence catch reports, commercial catch statistics in Districts 1 and 2, and preliminary escapement monitoring project information, the Yukon River chinook salmon run strength appears to be poor. With initial subsistence salmon needs being fulfilled and late run timing indicating that a small harvestable commercial surplus of chinook salmon is available, a commercial fishery in Subdistrict 5-D is now warranted.
3-S-UY-08-98	July 26	Established a 24-hour commercial fishing period and allowed the taking of salmon for	Chinook salmon have been present in Subdistrict 5-D since at least June 19. A 24-hour commercial fishing period is of shorter duration

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
		commercial purposes in Yukon Area Subdistrict 5-D from 6:00 p.m. Sunday, July 26, until 6:00 p.m. Monday, July 27, 1998.	than normal in Subdistrict 5-D. It is expected that this will be the only commercial fishing period in this subdistrict during the 1998 summer season and that the commercial harvest will be below the lower end of the guideline harvest range of 300 to 500 fish. With initial subsistence salmon needs being fulfilled and late run timing indicating that a small harvestable commercial surplus of chinook salmon is available, a 24-hour commercial fishing period in Subdistrict 5-D is now warranted.
3-S-UY-09-98	July 24	Closed the Yukon Area Subdistrict 6-C personal use salmon fishing season effective 6:00 p.m. Friday July 24, 1998.	Nenana test fish wheel catches, subsistence and personal use catches, and tower counts for the Chena and Salcha Rivers indicate below average abundance of chinook salmon and poor abundance of summer chum salmon in the Tanana River. Run timing is later than average. Approximately 2,495 and 3,295 chinook salmon and 726 and 1,559 summer chum salmon have passed the Chena and Salcha River towers respectively through July 22. The midpoint of the run at the counting towers is anticipated to be near July 20. The estimated commercial harvest to date is 900 chinook and 600 summer chum salmon. Based on the poor abundance of summer chum salmon, below average run of chinook salmon, and increasing percentage of female chinook salmon it is warranted to close personal use salmon fishing to ensure salmon escapements are met. Sport fishing for salmon will be restricted to catch and release in the Chatanika, Chena and Salcha Rivers effective July 25, 1998.

Appendix A.26. List of emergency orders pertaining to the fall chum and coho salmon fishery, Yukon Area, 1998.

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-YF-01-98	August 15	Closed Subdistrict 6-C personal use salmon fishing season.	Using the Lower Yukon River and Mountain Village test fisheries, Pilot Station main river sonar project, subsistence catch reports, age composition information and monitoring projects throughout the upper Yukon River drainage, it appeared the 1998 fall chum salmon run was below the level required to meet escapement and subsistence needs. The Yukon River Drainage Fall Chum Salmon Management Plan (Management Plan) directs a closure when the inseason projected level of return is below the plan's required run size. This EO continued the closure of 6-C personal use fishery which was initiated by EO 3-UY-09-98 to provide for a subsistence priority for fall chum salmon. No Yukon River fall chum salmon commercial fishing was anticipated for the season.
3-S-YF-02-98	August 27	Reduced Districts 1, 2, and 3 subsistence salmon fishing time to two 48-hour periods per week.	Using the Lower Yukon River and Mountain Village test fisheries, Pilot Station main river sonar project, subsistence catch reports, age composition information and monitoring projects throughout the upper Yukon River drainage, the department assessed the 1998 fall chum salmon run was very low in abundance with a late run timing. The Management Plan recommends management of the subsistence fall chum salmon fishery to achieve a 350,000 drainage-wide escapement level. Based on indicators to date, it appeared the projected run would not meet the escapement level and therefore restricting the subsistence salmon fisheries was warranted. In addition, no fall season commercial fisheries occurred to date, chum salmon catch and release restrictions were placed on sport fisheries throughout the Yukon River drainage, and the personal use salmon fishery near Fairbanks was closed.
3-S-YF-03-98	August 27	Reduced District 4 of the Yukon River, including Koyukuk River drainages, subsistence salmon fishing time to two 48-hour periods per week.	Using the Lower Yukon River and Mountain Village test fisheries, Pilot Station main river sonar project, subsistence catch reports, age composition information and monitoring projects throughout the upper Yukon River drainage, the department assessed the 1998 fall chum salmon run was very low in abundance with a late run timing. Based on indicators to date, it appeared the end of the season fall chum salmon run size would not meet the 350,000 escapement level directed by the Management Plan and therefore restrictions were warranted. In addition, no fall season commercial fisheries occurred to date, chum salmon catch and release restrictions were placed on sport fisheries throughout the Yukon River drainage, and the personal use salmon fishery near Fairbanks was closed.
3-S-YF-04-98	August 27	Reduced District 5 subsistence salmon fishing time to two 48-hour periods per week.	Using the Lower Yukon River and Mountain Village test fisheries, Pilot Station main river sonar project, subsistence catch reports, age composition information and monitoring projects throughout the upper Yukon River drainage, the department assessed the 1998 fall chum salmon run was very low in abundance with a late run timing. Based on indicators to date, it appeared the end of the season fall chum salmon run size would not meet the 350,000 escapement level directed by the Management

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-YF-04-98 -continued-			Plan and therefore warranted restrictions. No fall season commercial fisheries occurred to date, chum salmon catch and release restrictions were placed on sport fisheries throughout the Yukon River drainage, and personal use salmon fishery near Fairbanks was closed.
3-S-YF-05-98	August 28	Reduced Subdistrict 6-A Kantishna River drainage and Subdistrict 6-B Old Minto Area subsistence salmon fishing time to two 42-hour periods per week.	Using the Lower Yukon River and Mountain Village test fisheries, Pilot Station main river sonar project, subsistence catch reports, age composition information and monitoring projects throughout the upper Yukon River drainage, the department assessed the 1998 fall chum salmon run was very low in abundance with a late run timing. Based on indicators to date, it appeared the end of the season fall chum salmon run size would not meet the 350,000 escapement level directed by the Management Plan. Subsistence salmon fishing times in Districts 1, 2, 3, 4, and 5 of the Yukon River were reduced in previous EOs, warranting a reduction of fishing time in the Tanana River drainage. The Kantishna River was included in the reduction due to concern for the Toklat River fall chum salmon stock. The upper Tanana River drainage upstream of the Volkmar River drainage to the headwaters was not included in the reductions since fall chum salmon do not normally migrate into the upper reaches. No fall season commercial fisheries occurred to date, chum salmon catch and release restrictions were placed on sport fisheries throughout the Yukon River drainage, and the personal use salmon fishery near Fairbanks was closed.
3-S-YF-06-98	September 4	Returned Districts 1, 2, and 3 subsistence salmon fishing to 7 days per week.	As a result of projections that the 1998 fall chum salmon run would not meet the escapement level directed by the Management Plan, subsistence salmon fishing time was restricted in EO 3-S-YF-02-98 to conserve fall chum salmon. However, historically by September 4, most fall chum salmon have passed through the lower Yukon River districts. Coho salmon have a later but overlapping run timing. Lifting the subsistence salmon restriction allowed for additional harvest on later running coho salmon.
3-S-YF-07-98	September 4	Reduced District 4 and Subdistricts 5-C and 5-D subsistence salmon fishing to two 24-hour periods per week. Reduced Subdistricts 5-A and 5-B to four 12-hour periods per week.	Using the Lower Yukon River and Mountain Village test fisheries, Pilot Station main river sonar project, subsistence catch reports, age composition information and monitoring projects throughout the upper Yukon River drainage, the department assessed the 1998 fall chum salmon run was very low in abundance with a late run timing. The majority of upriver monitoring and escapement projects exhibited the lowest passages on record for the date. Restricting subsistence fisheries was warranted to conserve fall chum salmon. Subdistricts 5-A and 5-B were placed on a different schedule than District 4 and Subdistricts 5-C and 5-D as requested by representatives of subsistence users from the village of Tanana.
3-S-YF-08-98	September 4	Allowed continued subsistence fishing above the Volkmar River 7-days per week.	Based on indicators to date, the department assessed the 1998 fall chum salmon run as very low in abundance with a late run timing. Projections were that the run would not meet the escapement level directed by the Management Plan. Subsistence fishery

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-YF-08-98 -continued-			restrictions were implemented throughout the Yukon River drainage to conserve fall chum salmon. The majority of fish harvested in the upper Tanana River subsistence fishery is comprised of whitefish and other non-salmon species. Because few fall chum salmon migrate into the upper portion of the Tanana River drainage, continued subsistence fishing in the Tanana River upstream of the Volkmar River to the headwaters is warranted.
3-S-YF-09-98	September 4	Reduced Subdistricts 6-A and 6-B subsistence salmon fishing time to two 24-hour periods per week.	Using the Lower Yukon River and Mountain Village test fisheries, Pilot Station main river sonar project, subsistence catch reports, age composition information and monitoring projects throughout the upper Yukon River drainage, the department assessed the 1998 fall chum salmon run was very low in abundance with a late run timing. Based on indicators to date, it appeared the end of the season fall chum salmon run size would not meet the 350,000 escapement level directed by the Management Plan. The majority of upriver monitoring and escapement projects exhibited the lowest passages on record for the date. To conserve fall chum salmon, restricting the subsistence fisheries was warranted.
3-S-YF-10-98	September 22	Returned Subdistrict 4-A, excluding Koyukuk River drainage, subsistence salmon fishing to 7-days per week.	EO 3-S-YF-07-98 restricted the subsistence salmon fishing schedule to conserve fall chum salmon. However, by September 22, most fall chum salmon have passed through the Yukon River in Subdistrict 4-A bound for the upper Yukon drainage. Coho salmon have a later but overlapping run timing. The 1998 Yukon River coho salmon was assessed to be average to above average in strength. Returning to the normal 7-days a week schedule was warranted to allow additional harvest on later running coho salmon. The subsistence salmon fishing schedule in Subdistricts 4-B and 4-C and in the Koyukuk River drainage remained unchanged.
3-S-YF-11-98	September 22	Reduced Subdistricts 5-B, 5-C and 5-D subsistence salmon fishing time to one 24-hour period per week. Subdistrict 5-A remained at two 24-hour periods per week.	Based on assessments using lower Yukon River projects, restrictions on Yukon River drainage subsistence fishing for 1998 fall chum salmon were necessary to achieve escapement objectives. Continued assessment of a majority of the monitoring and escapement projects in the upper Yukon River drainage indicated the lowest passages of salmon on record for this date. To conserve fall chum salmon in the upper Yukon River drainage, further restrictions on the subsistence fishery were warranted in Subdistricts 5-B, 5-C and 5-D. Tanana River drainage stocks have a later run timing and were migrating through Subdistrict 5-A, which is below the mouth of the Tanana River. Pending further assessment of the status of Tanana River fall chum salmon, it was determined that Subdistrict 5-A would remain unchanged on its previously established restricted schedule.
3-S-YF-12-98	September 28	Reduced Subdistricts 6-A and 6-B subsistence salmon fishing time to one 24-hour period per week.	Based on in-season indicators to date using Subdistricts 5-A and 6-B fish wheels and the Tanana River tagging project, the department assessed the 1998 Tanana River fall chum salmon return was very low in abundance with a late run timing. The poor return of salmon would not support normal subsistence harvest levels and meet

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-YF-12-98 -continued-			escapement needs and therefore required further reduction of subsistence fishing time in the Tanana River drainage and in a portion of the Yukon River directly below the mouth of the Tanana River.
3-S-YF-13-98	September 29	Reduced Subdistrict 5-A subsistence salmon fishing time to one 24-hour period per week to match Subdistrict 5D. Returned Subdistricts 5-B and 5-C subsistence salmon fishing to 7-days per week	Based on in-season indicators to date using Subdistricts 5-A and 6-B fish wheels and the Tanana River tagging project, the department assessed the 1998 Tanana River fall chum salmon return was very low in abundance with a late run timing. It appeared the poor return of salmon would not support normal subsistence harvest levels and meet escapement needs. A further reduction of subsistence salmon fishing time was warranted in the portion of the Yukon River directly below the mouth of the Tanana River in Subdistrict 5-A. Tanana River salmon stocks migrate through this subdistrict. In addition, previous restrictions were placed on subsistence salmon fishing in the Yukon River drainage in Subdistricts 5-B and 5-C to conserve fall chum salmon. By September 29, most of the salmon should have passed through this region bound for spawning grounds in the upper Yukon River drainage and return of the subsistence salmon fishery to its normal schedule was warranted.
3-S-YF-14-98	September 29	Returned Subdistricts 4-B, 4-C and the Koyukuk River drainage subsistence salmon fishing to 7-days per week.	Subsistence fishing was previously placed on a restricted schedule to conserve fall chum salmon. By September 29, most fall chum salmon have passed through Subdistricts 4-B and 4-C bound for the upper Yukon River drainage spawning grounds. Coho salmon have a later but overlapping run time. Lifting the subsistence salmon fishing restrictions and returning to the normal 7-days per week schedule was warranted to allow additional harvest on later running coho salmon.
3-S-YF-15-98	October 1	Continued Subdistrict 6-C personal use salmon fishing closure.	The 1998 fall chum salmon return was estimated to be below the level required to meet escapement and subsistence needs. At the projected level of return, the Management Plan directs closure of the personal use fishery. EO 3-S-YF-01-98 closed the personal use fishery through the end of September with the expectation most of the fall chum would have passed through by that time. However, the 1998 fall chum salmon run timing was very late and resulted in the continued closure of personal use salmon fishing until mid October.
3-S-YF-16-98	October 2	Returned Subdistrict 5-D to the normal subsistence salmon fishing schedule of 7-days a week. Continued the Subdistrict 5-A restricted subsistence salmon fishing schedule of one 24-hour period per week until October 8 when it returned to the normal schedule of 7-days a week	By October, most fall chum salmon have passed through the Yukon River portion of Subdistricts 5-B, 5-C and 5-D bound for spawning grounds in the upper Yukon River drainage. Subdistricts 5-B and 5-C were returned to the normal 7-days a week schedule in EO 3-S-YF-13-98. This EO returned Subdistrict 5-D to the normal 7-days a week schedule to allow increased harvest opportunity for later running coho salmon and other non-salmon species. In addition, this EO continued the previously announced restricted subsistence salmon fishing schedule in Subdistrict 5-A until October 8. By that date most fall chum salmon have passed through the subdistrict bound for spawning grounds in the Tanana River drainage and a return to the normal

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-S-YF-16-98 -continued-			7-days per week schedule was warranted.
3-S-YF-17-98	October 5	Returned Subdistricts 6-A and 6-B to the normal two 42-hours per week subsistence salmon fishing schedule. The Kantishna River drainage returned to the normal 7-days a week subsistence fishing schedule and the Old Minto area returned to the normal 5-days a week subsistence salmon fishing schedule. Subdistrict 5-A returned to the normal 7-days a week schedule.	Subdistricts 5-A, 6-A and 6-B, including the Kantishna River drainage and the Old Minto area, were on restrictive subsistence salmon fishing schedules to conserve fall chum salmon. By October, most fall chum salmon have passed through these subdistricts bound for spawning grounds. Lifting the restrictions and returning to normal schedules in the respective areas was warranted to allow for additional fishing opportunities on the later running coho salmon and whitefish that may be in the area.

APPENDIX B

LOWER YUKON AREA SALMON

Appendix B.1. Commercial catches of chinook and summer chum salmon by mesh size, Districts 1 and 2, Lower Yukon Area, 1961-1998.^a

Year	Unrestricted Mesh Size ^b			6 inch Maximum Mesh Size ^c		
	Chinook		Summer Chum Districts 1 and 2	Chinook		Summer Chum Districts 1 and 2
	District 1	District 2		Districts 1 and 2	Districts 1 and 2	
1961	84,466	29,026	113,492	-	-	-
1962	67,099	22,224	89,323	-	-	-
1963	85,004	24,221	109,225	-	-	-
1964	67,555	20,246	87,801	-	-	-
1965	89,268	23,763	113,031	-	-	-
1966	70,788	16,927	87,715	-	-	-
1967	104,350	20,239	124,589	10,919	-	-
1968	79,465	21,392	100,857	14,402	-	-
1969	70,588	14,756	85,344	41,418	97	15,437
1970	56,469	17,141	73,610	104,705	57	16,623
1971	84,397	19,226	103,623	42,189	1,176	57,851
1972	68,059	17,317	85,376	78,698	1,991	37,881
1973 ^d	52,790	12,479	65,269	89,841	5,168	196,540
1974	69,457	17,464	86,921	349,758	1,631	227,507
1975	41,550	9,064	50,614	148,919	4,162	345,472
1976	56,392	15,296	71,688	267,075	7,631	128,431
1977	65,745	15,328	81,073	157,909	4,720	205,634
1978	53,198	28,872	82,070	275,512	7,737	354,603
1979	61,790	33,347	95,137	136,973	22,136	434,188
1980	78,157	42,755	120,912	95,876	19,474	605,679
1981	88,038	37,660	125,698	163,979	18,648	758,767
1982	70,743	35,656	106,399	225,106	6,887	217,563
1983	76,280	30,798	107,078	121,927	31,002	590,329
1984	65,101	29,355	94,456	242,076	16,394	287,531
1985 ^f	76,106	38,194	114,300	170,345	22,445	265,240
1986	42,922	36,603	79,525	231,372	15,307	438,182
1987	62,147	40,127	102,274	128,017	21,827	269,757
1988	32,792	20,009	52,801	225,049	39,469	848,321
1989 ^g	32,180	21,494	53,674	126,360	38,548	765,233
1990 ^g	42,092	24,000	66,092	99,588	18,147	281,418
1991 ^g	52,074	36,290	88,364	108,986	4,145	205,610
1992 ^g	54,569	28,679	83,248	81,458	27,678	242,878
1993	47,084	37,293	84,377	47,488	2,202	45,503
1994	61,633	41,692	103,325	39,832	608	15,369
1995	74,827	39,607	114,434	113,860	3,098	112,223
1996	56,642	30,209	86,851	123,233	0	0
1997	63,062	39,052	102,114	49,953	3,611	28,204
1998	24,202	16,806	41,008	20,314	1,211	7,804
10 Year Average (1978-1987)						
	67,448	35,337	102,785	179,118	18,186	422,184
10 Year Average (1988-1997)						
	51,696	31,833	83,528	101,581	13,751	254,476

a ADF&G test fishery sales included, 1961-1990. ADF&G test fishery sales not included, 1991-1993.

b Primarily 8 to 8-1/2 inch mesh size used during early June to early July.

c Catch through July 15-20, relatively few chinook and summer chum salmon taken after these dates.

d Six inch maximum mesh size regulation beginning late June to early July became effective in 1973.

f Six inch maximum mesh size regulation by emergency order during commercial fishing season became effective in 1985.

g Only includes information from fish ticket database; does not include salmon purchased illegally.

Appendix B.2. Commercial chinook salmon harvest data by unrestricted mesh size periods, District 1, Lower Yukon Area, 1974-1998.

Period and (Cumulative) Harvest ^a											
Date	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
06/01											
06/02											
06/03											
06/04											
06/05	3.5 (3.5)					6.1 (6.1)					
06/06											
06/07								11.1 (11.1)			
06/08	7.5 (11.0)					4.9 (11.0)					
06/09					2.5 (2.5)			15.6 (26.7)			
06/10							6.8 (6.8)			22.3 (22.3)	
06/11		0.2 (0.2)									
06/12	14.7 (25.7)					19.5 (30.5)		14.5 (41.2)			
06/13					5.8 (8.3)						
06/14		0.4 (0.6)		0.04 (0.04)			26.1 (32.9)			12.7 (35.0)	
06/15	11.1 (36.8)								5.6 (5.6)		
06/16			0.1 (0.1)			9.3 (39.8)		18.3 (59.5)			
06/17					17.6 (25.9)		14.6 (47.5)			28.6 (63.6)	
06/18		1.1 (1.7)		2.6 (2.6)					12.4 (18.0)		
06/19	18.8 (55.6)		3.2 (3.3)			16.7 (56.5)		28.5 (88.0)			13.7 (13.7)
06/20					7.5 (33.4)						
06/21		5.7 (7.4)		10.4 (13.0)			26.2 (73.7)			12.7 (76.3)	
06/22	2.9 (58.5)					5.3 (61.8)			20.0 (38.0)		18.8 (32.5)
06/23			9.6 (12.9)				4.5 (78.2)				
06/24					14.4 (47.8)						
06/25		17.1 (24.5)		26.3 (39.3)					7.1 (45.1)		
06/26	7.2 (65.7)		15.4 (28.3)								16.1 (48.6)
06/27		9.8 (34.3)			5.4 (53.2)						
06/28				17.7 (57.0)							
06/29	3.8 (69.5)								18.1 (63.2)		16.5 (65.1)
06/30			13.8 (42.1)								
07/01		7.3 (41.6)		8.7 (65.7)							
07/02			14.3 (56.4)						7.5 (70.7)		
07/03											
07/04											
07/05											
07/06											
07/07											
07/08											

- Continued -

Appendix B.3. (page 2 of 2).

Period and (Cumulative) Harvest ^a											
Date	1988	1989	1990	1991 ^b	1992 ^c	1993	1994	1995	1996	1997	1998
06/01											
06/02											
06/03											
06/04											
06/05											
06/06											
06/07											
06/08											
06/09									7.5 (7.5)		
06/10											
06/11								1 (1.2)			
06/12									10.0 (17.5)		
06/13											
06/14								9 (10.4)			
06/15							8 (8.2)			7.3 (7.3)	
06/16	3 (2.7)								4.9 (22.4)		
06/17				12 (11.5)		11 (10.6)					
06/18			10 (10.3)					10 (20.2)		9.6 (16.8)	
06/19		11 (11.0)							3.3 (25.7)		
06/20	9 (11.7)			10 (21.1)			18 (26.4)				
06/21						14 (24.7)		8 (28.6)			
06/22		8 (18.5)			6 (5.5)					15.2 (32.1)	
06/23	8 (20.0)								3.3 (29.0)		
06/24			8 (18.0)	7 (27.8)	13 (18.5)						
06/25		3 (21.5)				7 (31.5)	11 (37.6)			7.0 (39.1)	
06/26				4 (31.9)							6.6 (6.6)
06/27						3 (33.7)					
06/28					7 (25.9)						
06/29											
06/30						3 (36.0)					
07/01									1.2 (30.2)		
07/02			5 (22.4)								7.5 (14.0)
07/03							4 (41.7)				
07/04				4 (36.3)							
07/05			2 (24.0)								
07/06											
07/07											
07/08					3 (28.7)						2.8 (16.8)

a Catch by period in thousands of fish. Cumulative catch during unrestricted mesh size fishing periods in, thousands of fish, are located in the brackets ().

b Does not include 284 chinook salmon caught illegally.

c Does not include 207 chinook salmon caught illegally.

Appendix B.4. Commercial chinook salmon harvest by statistical area, Lower Yukon Area, 1974-1998.

Year	District 1								Total
	334-11	334-12	334-13	334-14	334-15	334-16	334-17	334-18	
1974	2,935	30,174	6,984	3,987	12,721	2,048	6,826	6,165	71,840
1975	6,396	15,844	8,763	314	1,720	606	6,879	4,063	44,585
1976	8,333	27,937	7,507	851	5,101	1,415	6,164	5,102	62,410
1977	11,278	16,787	8,866	1,216	15,214	1,550	7,109	7,895	69,915
1978	886	12,237	4,135	4,388	22,019	3,738	7,533	4,070	59,006
1979	1,017	13,152	4,149	5,782	12,839	10,960	18,976	8,202	75,077
1980	464	12,832	3,235	9,224	30,737	12,333	13,654	7,903	90,382
1981	6,639	12,875	2,975	8,976	19,730	15,158	22,251	10,902	99,506
1982	3,439	11,268	2,842	9,038	9,331	7,295	18,185	13,052	74,450
1983	7,919	23,523	8,161	14,961	9,416	5,297	19,172	7,008	95,457
1984	14,385	15,320	2,598	6,297	11,123	1,434	19,089	4,425	74,671
1985	4,233	22,696	12,160	2,492	12,806	3,955	25,144	6,525	90,011
1986	4,187	7,954	3,494	5,430	10,258	1,422	15,948	4,342	53,035
1987	14,656	12,056	8,703	3,533	6,780	3,250	18,573	9,092	76,643
1988	6,780	11,154	6,023	4,274	14,123	618	8,703	5,434	57,109
1989 ^a	2,213	5,703	4,794	3,999	12,682	7,303	18,037	4,422	59,153
1990 ^b	1,473	7,315	4,478	4,257	12,486	2,794	14,619	3,739	51,161
1991 ^c	1,689	4,244	1,624	3,451	12,664	6,251	18,243	5,455	53,621
1992 ^d	11,302	12,601	9,001	6,313	5,880	2,285	18,233	7,379	72,994
1993	3,642	7,368	4,342	3,324	11,407	2,346	9,380	7,477	49,286
1994	4,176	6,723	5,037	3,888	14,580	1,686	17,575	8,576	62,241
1995	3,719	6,939	6,181	5,430	22,357	3,790	18,980	8,710	76,106
1996	6,079	6,858	3,791	3,297	8,850	4,478	16,789	6,500	56,642
1997	4,570	5,865	2,844	6,648	12,460	4,703	21,443	7,851	66,384
1998	226	1,741	654	1,591	7,264	1,934	7,822	4,181	25,413
5 Year Average 1993-1997	4,437	6,751	4,439	4,517	13,931	3,401	16,833	7,823	62,132

-Continued-

Appendix B.4. (p. 2 of 2).

Year	District 2						District 3		
	334-21	334-22	334-23	334-24	334-25	Total	334-31	334-32	Total
1974	6,344	5,611	2,624	3,369	-	17,948	1,423	2,057	3,480
1975	3,282	3,045	2,785	2,203	-	11,315	2,791	1,386	4,177
1976	5,083	4,490	3,031	3,952	-	16,556	1,827	2,321	4,148
1977	6,577	4,584	2,110	3,451	-	16,722	1,617	2,348	3,965
1978	9,004	7,953	5,248	8,499	2,220	32,924	746	2,170	2,916
1979	10,698	11,214	6,733	7,573	5,280	41,498	2,195	2,823	5,018
1980	11,544	12,903	8,259	9,591	7,707	50,004	2,039	3,201	5,240
1981	12,341	13,275	7,024	5,950	7,191	45,781	1,241	2,782	4,023
1982	10,567	9,236	5,262	8,932	5,135	39,132	896	1,713	2,609
1983	12,433	10,424	7,779	6,260	6,333	43,229	1,335	2,771	4,106
1984	9,179	11,573	4,668	5,752	5,525	36,697	900	2,139	3,039
1985	11,843	18,584	4,877	4,613	8,448	48,365	854	1,734	2,588
1986	11,138	15,326	3,450	4,336	7,599	41,849	606	295	901
1987	14,195	9,672	5,663	6,376	11,552	47,458	1,698	341	2,039
1988	6,191	11,605	4,721	6,784	5,887	35,188	1,387	380	1,767
1989	5,257	12,380	4,647	4,411	6,530	33,225	1,623	22	1,645
1990	5,592	10,675	3,741	8,514	4,691	33,213	2,128	213	2,341
1991 ^f	9,330	10,423	5,332	6,552	7,339	38,976	1,214	1,130	2,344
1992 ^g	9,014	11,647	4,135	11,311	1,825	37,932	1,160	659	1,819
1993	8,641	9,223	6,118	6,085	7,226	37,293	1,478	23	1,501
1994	9,223	14,350	4,514	8,734	4,871	41,692	1,114	0	1,114
1995	7,832	14,041	4,841	5,887	8,857	41,458	0	0	0
1996	8,265	9,134	2,749	3,626	6,435	30,209	0	0	0
1997	13,939	13,344	2,280	6,104	3,696	39,363	0	0	0
1998	2,203	6,081	2,245	4,613	1,664	16,806	0	0	0
5 Year Average									
1993-1997	9,580	12,018	4,100	6,087	6,217	38,003	518	5	523

a Does not include 3,211 chinook and 150 summer chum salmon sold illegally.

b Does not include 1,101 chinook salmon sold illegally.

c Does not include 2,711 chinook and 1,023 summer chum salmon sold illegally.

d Does not include 1,218 chinook and 31 summer chum salmon sold illegally.

f Does not include 284 chinook salmon sold illegally.

g Does not include 207 chinook and 91 summer chum salmon sold illegally.

Appendix B.5. Commercial summer chum salmon harvest and effort data, Districts 1 and 2, Lower Yukon Area, 1967-1998.^a

Year	District 1					District 2				
	Duration	Days Fished	Boat Hours	Catch	Catch per Boat Hour	Duration	Days Fished	Boat Hours	Catch	Catch per Boat Hour
1967	6/08-6/27	11.0	77,208	9,494	0.12	-	-	-	-	-
1968	6/06-7/03	14.0	91,380	12,995	0.14	6/13-7/02	10.5	27,600	1,407	0.05
1969	6/02-6/28	12.5	84,864	8,840	0.10	6/15-7/01	8.0	16,620	5,024	0.30
1970	6/11-7/03	10.5	58,056	87,169	1.50	6/14-7/03	9.0	15,756	17,536	1.11
1971	6/14-7/03	10.5	73,032	36,077	0.49	6/20-7/05	8.5	17,832	6,112	0.34
1972	6/08-7/01	12.5	79,236	69,658	0.88	6/15-7/01	8.5	19,296	9,040	0.47
1973 ^b	6/07-7/11	14.5	100,284	191,840	1.91	6/10-7/14	14.5	36,000	56,481	1.57
1974	6/03-7/13	16.5	114,624	461,025	4.02	6/05-7/16	15.5	35,316	72,281	2.05
1975	6/09-7/16	15.0	86,304	394,447	4.57	6/11-7/18	10.5	21,024	99,139	4.72
1976	6/14-7/14	12.0	90,658	272,493	3.01	6/20-7/16	11.0	32,624	99,190	3.04
1977	6/13-7/12	12.0	63,036	232,427	3.69	6/19-7/15	10.0	27,048	102,759	3.80
1978	6/08-7/15	13.5	100,008	393,785	3.94	6/08-7/14	13.5	44,376	218,196	4.92
1979	6/04-7/14	13.5	106,680	369,934	3.47	6/03-7/13	13.5	44,748	172,838	3.86
1980	6/09-7/15	12.8	89,412	391,252	4.38	6/08-7/17	12.5	48,060	308,704	6.42
1981	6/06-7/14	12.0	94,656	507,158	5.36	6/07-7/16	12.0	46,560	351,458	7.55
1982	6/14-7/13	9.5	81,240	248,950	3.06	6/16-7/16	10.0	37,920	180,321	4.76
1983	6/09-7/15	11.0	94,920	451,164	4.75	6/12-7/18	11.0	44,712	248,092	5.55
1984	6/18-7/13	8.0	67,776	292,676	4.32	6/20-7/16	8.0	32,208	234,677	7.29
1985 ^c	6/24-7/15	6.3	52,116	247,486	4.75	6/26-7/18	7.3	27,834	188,099	6.76
1986	6/14-7/15	8.5	66,768	381,127	5.71	6/15-7/14	7.5	33,954	288,427	8.49
1987	6/15-7/10	6.0	53,736	222,898	4.15	6/17-7/09	5.0	26,124	174,876	6.69
1988	6/09-7/15	6.8	55,692	648,198	11.64	6/12-7/14	6.8	33,456	425,172	12.71
1989	6/13-7/14	5.3	65,280	547,781 ^d	8.39	6/15-7/13	4.5	22,314	343,962	15.41
1990	6/14-7/03	2.3	21,267	148,911	7.00	6/18-7/05	2.4	12,333	132,507	10.74
1991	6/13-7/05	3.0	28,224	140,470 ^f	4.98	6/16-7/07	3.0	15,126	175,149	11.58
1992	6/20-7/09	2.9	25,925	177,329 ^g	6.84	6/22-7/08	2.3	11,705	147,129 ^h	12.57
1993	6/14-7/01	2.0	19,176	73,659	3.84	6/16-6/30	1.8	9,264	19,332	2.09
1994	6/13-7/05	1.6	14,073	42,332	3.01	6/15-7/03	1.3	6,807	12,869	1.89
1995	6/12-7/07	2.6	21,619	142,266	6.58	6/11-6/22	1.6	8,436	83,817	9.94
1996	6/10-6/28	2.5	28,812	92,506	3.21	6/09-7/01	2.4	9,339	30,727	3.29
1997	6/11-6/30	2.7	23,505	59,915	2.55	6/15-6/26	1.9	7,394	18,242	2.47
1998	6/15-7/08	1.5	12,207	21,270	1.74	6/26-7/09	1.0	4,914	6,848	1.39

a Summer chum salmon caught after the specified dates are not included. Includes ADF&G test fish sales through 1990.

b Six inch maximum mesh size regulation during late June to early July became effective in 1973.

c Six inch maximum mesh size regulation by emergency order during commercial fishing season became effective in 1985.

d Includes 150 summer chum salmon sold illegally.

f Includes 1,023 summer chum salmon sold illegally.

g Includes 31 summer chum salmon sold illegally.

h Includes 91 summer chum salmon sold illegally.

Appendix B.6. Commercial summer chum salmon harvest by statistical area, Lower Yukon Area, 1983-1998.

Year	District 1								Total
	334-11	334-12	334-13	334-14	334-15	334-16	334-17	334-18	
1983	42,165	112,074	37,976	64,556	29,841	22,918	96,512	45,122	451,164
1984	42,264	81,295	14,888	38,285	22,485	5,838	64,320	23,301	292,676
1985	13,696	53,540	26,127	10,047	33,133	10,381	73,948	26,614	247,486
1986	39,468	102,887	35,315	52,980	26,732	6,807	85,798	31,140	381,127
1987	34,852	51,350	22,794	15,109	21,646	7,786	45,911	23,450	222,898
1988	72,408	148,578	79,248	60,956	61,752	13,239	129,938	82,070	648,189
1989 ^a	29,129	89,794	40,036	71,576	118,908	20,468	136,669	41,051	547,631
1990 ^b	23,453	35,542	15,326	12,369	10,931	1,513	39,575	10,202	148,911
1991 ^c	13,767	32,621	5,223	11,133	11,560	23,213	34,775	7,155	139,447
1992 ^d	24,094	39,225	22,293	16,717	12,000	2,500	40,353	20,116	177,298
1993	13,123	17,869	9,745	8,672	2,920	661	9,196	11,473	73,659
1994	11,208	6,340	5,165	2,389	3,602	290	8,693	4,645	42,332
1995	32,084	23,420	15,834	19,154	15,919	3,150	24,349	8,356	142,266
1996	19,432	17,769	6,837	5,611	13,111	2,831	17,864	9,051	92,506
1997	10,764	9,519	6,190	10,374	5,429	1,650	10,719	5,270	59,915
1998	54	2,583	441	2,275	5,115	730	6,601	3,471	21,270
5 Year Average									
1993-1997	17,322	14,983	8,754	9,240	8,196	1,716	14,164	7,759	82,136

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Year	District 2						District 3								
	334-21	334-22	334-23	334-24	334-25	Total	334-31			334-32			Total		
							Number	Roe	Estimated Harvest ^g	Number	Roe	Estimated Harvest ^g	Number	Roe	Estimated Harvest ^g
1983	57,740	71,821	56,499	31,027	31,005	248,092	3,106		3,106	11,494		11,494	14,600		14,600
1984	46,261	91,790	43,116	36,076	19,688	236,931	447		447	640		640	1,087		1,087
1985	32,911	87,687	24,983	18,911	23,607	188,099	872		872	920		920	1,792		1,792
1986	44,393	129,569	36,304	47,179	30,982	288,427	442		442	0		0	442		442
1987	48,734	54,459	19,157	22,988	29,538	174,876	3,418		3,418	83		83	3,501		3,501
1988	74,252	140,291	56,302	88,393	65,934	425,172	11,463		11,463	2,502		2,502	13,965		13,965
1989	46,224	140,571	48,986	54,542	53,639	343,962	7,548		7,548	30		30	7,578		7,578
1990 ^b	15,414	37,585	25,132	34,980	19,396	132,507	562		562	81		81	643		643
1991	46,378	70,188	32,584	14,915	11,084	175,149	3,347		3,347	5,565		5,565	8,912		8,912
1992 ^f	31,399	59,401	22,107	31,085	3,046	147,038	63		63	2		2	65		65
1993	5,444	3,711	4,445	2,920	2,812	19,332	460		460	3		3	463		463
1994	4,100	5,314	1,435	1,395	625	12,869	35		35	0		0	35		35
1995	23,794	38,808	11,541	7,257	2,417	83,817	0		0	0		0	0		0
1996	9,177	13,056	4,965	2,479	1,050	30,727	0	162	465	0	773	1,069	0	935	1,534
1997	7,126	7,938	673	1,667	838	18,242	0	0	0	0	0	0	0	0	0
1998	710	2,350	1,079	2,351	358	6,848	0	0	0	0	0	0	0	0	0
5 Year Average															
1993-1997	9,928	13,765	4,612	3,144	1,548	32,997	99	-	192	1	387	214	100	-	406

^a Does not include 150 summer chum salmon sold illegally.

^b Includes ADF&G test fish sales through 1990.

^c Does not include 1,023 summer chum salmon sold illegally.

^d Does not include 31 summer chum salmon sold illegally.

^f Does not include 91 summer chum salmon sold illegally.

^g Estimated harvest includes reported harvest of both males and females harvested to produce roe sold.

Appendix B.7. Commercial fall chum and coho salmon harvest and effort data, District 1,
Lower Yukon Area, 1961-1998. ^a

Year	Duration	Days Fished ^b	Boat Hours	Fall Chum		Coho	
				Catch	Catch per Boat Hour	Catch	Catch per Boat Hour
1961	8/01-8/31	16	14,772	42,461	2.87	2,855	0.19
1962	8/01-9/03	21	46,950	53,116	1.13	22,926	0.49
1963	8/09-9/06	18	2,100	no purchases		5,572	2.65
1964	8/03-8/27	17	8,346	8,347	1.00	2,446	0.29
1965	8/02-8/04	- ^c	- ^c	22,936	- ^c	350	- ^c
1966	7/25-9/10	28	41,994	69,836	1.66	19,254	0.46
1967	7/24-8/27	21	19,272	36,451	1.89	9,925	0.51
1968	7/22-8/28	22	47,232	49,857	1.06	13,153	0.28
1969	7/21-8/23	20	39,408	128,866	3.27	13,989	0.35
1970	7/20-8/26	22	56,160	200,306	3.57	12,632	0.22
1971	7/22-8/28	22	85,344	178,744	2.09	12,165	0.14
1972	7/20-8/26	22	81,726	134,752	1.65	21,705	0.27
1973	7/19-8/25	22	107,136	173,783	1.62	34,860	0.33
1974	7/18-8/14	12	41,868	137,235	3.28	13,713	0.33
1975	7/21-8/16	12	52,128	158,183	3.03	2,288	0.04
1976	7/19-8/13	11	55,026	91,091	1.66	4,064	0.07
1977	7/18-8/23	11	50,568	129,486	2.56	31,720	0.63
1978	7/17-8/29	13	56,184	127,947	2.28	16,460	0.29
1979	7/19-8/14	8	47,352	101,400	2.14	11,369	0.24
1980	7/17-8/19	7	24,216	106,829	4.41	4,819	0.20
1981	7/16-8/17	7	35,520	167,834	4.73	13,129	0.37
1982	7/19-8/13	8	40,944	91,271	2.23	15,114	0.37
1983 ^d	7/18-8/12	6	25,848	124,371	4.81	4,560	0.18
1984 ^d	7/16-8/17	6	21,240	78,751	3.71	29,472	1.39
1985 ^d	7/18-8/13	5	20,592	124,801	6.06	27,674	1.34
1986 ^f	8/04-8/22	4	13,662	59,352	4.34	24,824	1.82
1987	No Openings	0					
1988 ^g	8/08-8/30	3	9,408	45,529	4.84	36,435	3.87
1989 ^h	7/27-8/25	5	20,161	77,876	3.86	24,672	1.22
1990 ^{g, j}	7/23-8/20	3	7,392	27,337	3.70	13,354	1.81
1991 ^h	7/29-8/27	3	19,500	59,724	3.67	54,095	3.32
1992	No Openings	0					
1993	No Openings	0					
1994	No Openings	0					
1995 ^k	7/31-8/21	3	5,436	79,345	14.60	21,625	3.98
1996	8/06-8/26	4	7,715	33,629	4.36	27,705	3.59
1997	8/06-8/18	3	7,395	27,483	3.72	21,450	2.90
1998	No Openings	0					

a Prior to 1986, some fall chum and coho salmon may have been caught prior to specified dates. Includes ADF&G test fish sales through 1990.

b One day is equivalent to 24 hours of open fishing.

c Information unavailable.

d District was divided into a Set Net Only (24 hour) area and a Gill Net (12 hour) area.

f District was divided into a Set Net Only (24 or 12 hour) area and a Gill Net (12 or 6 hour) area.

g District was divided into a Set Net Only (12 hour) area and a Gill Net (6 hour) area.

h District was divided into a Set Net Only (16 or 12 hour) area and a Gill Net (9 or 6 hour) area.

j Includes ADF&G test fish sales through 1990.

k District was divided into a Set Gillnet Only Area (12, 9, 6, 4 or 3 hour) and a Gillnet area (9, 6, 4, or 3 hour).

Appendix B.8. Commercial fall chum and coho salmon harvest and effort in the Set Gillnet Only Area and the Gillnet Area, District 1, Lower Yukon Area, 1983-1998.^a

Year	Setnet Area			Gillnet Area			Total		
	Number of Fishermen	Catch	Average Catch per Fisherman	Number of Fishermen	Catch	Average Catch per Fisherman	Number of Fishermen	Catch	Average Catch per Fisherman
Fall Chum Salmon									
1983	137	46,583	340	175	61,649	352	312	108,232	347
1984	137	34,817	254	164	24,307	148	301	59,124	196
1985	159	64,838	408	153	53,694	351	312	118,532	380
1986	122	28,449	233	160	30,903	193	282	59,352	210
1987 ^b									
1988	120	21,971	183	208	23,558	113	328	45,529	139
1989	103	26,865	261	219	51,011	233	322	77,876	242
1990	83	7,553	91	218	19,764	91	301	27,337	91
1991	67	19,769	295	252	39,955	159	319	59,724	187
1992 ^b									
1993 ^b									
1994 ^b									
1995	40	13,320	333	149	66,025	443	189	79,345	420
1996 ^c									
1997	15	2,500	167	161	24,983	155	176	27,483	156
1998 ^b									
Coho Salmon									
1983	137	1,021	7	175	3,536	20	312	4,557	15
1984	137	15,077	110	164	14,390	88	301	29,467	98
1985	159	12,841	81	153	14,832	97	312	27,673	89
1986	122	9,334	77	160	15,490	97	282	24,824	88
1987 ^b									
1988	120	13,408	112	208	23,027	111	328	36,435	111
1989	103	6,443	63	219	18,227	83	322	24,670	77
1990	83	2,033	24	218	11,321	52	301	13,354	44
1991	67	19,497	291	252	34,598	137	319	54,095	170
1992 ^b									
1993 ^b									
1994 ^b									
1995	40	2,843	71	149	18,782	126	189	21,625	114
1996 ^c									
1997	15	2,061	137	161	19,389	120	176	21,450	122
1998 ^b									
Combined Fall Chum and Coho Salmon									
1983	137	47,604	347	175	65,185	372	312	112,789	362
1984	137	49,894	364	164	38,697	236	301	88,591	294
1985	159	77,679	489	153	68,526	448	312	146,205	469
1986	122	37,783	310	160	46,393	290	282	84,176	298
1987 ^b									
1988	120	35,379	295	208	46,585	224	328	81,964	250
1989	103	33,308	323	219	69,238	316	322	102,546	318
1990	83	9,586	115	218	31,105	143	301	40,691	135
1991	67	39,266	586	252	74,553	296	319	113,819	357
1992 ^b									
1993 ^b									
1994 ^b									
1995	40	16,163	404	149	84,807	569	189	100,970	534
1996 ^c									
1997	15	4,561	304	161	44,372	276	176	48,933	278
1998 ^b									

a Prior to 1986, some harvests of fall chum and coho salmon occurred before setnet only area designation went into effect. Includes ADF&G test fish sales through 1990.

b No commercial fishing was allowed during the fall season.

c Data not available.

Appendix B.9. Commercial fall chum salmon harvest by period, District 1, Lower Yukon Area, 1978-1998.

Period and (Cumulative) harvest ^a										
Date	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
07/18	6.3 (6.3)		4.2 (4.2)					6.3 (6.3)		
07/19						16.1 (16.1)				
07/20		6.0 (6.0)			4.3 (4.3)					
07/21	5.1 (11.4)			6.0 (6.0)						
07/22			6.6 (10.8)							
07/23					27.8 (32.1)					
07/24		7.2 (13.2)		1.3 (7.3)						
07/25	52.8 (64.2)		10.4 (21.2)							
07/26										
07/27		14.8 (28.0)			4.0 (36.1)					
07/28	2.8 (67.0)			57.3 (64.6)						
07/29			15.3 (36.5)			3.0 (19.1)				
07/30					11.7 (47.8)					
07/31		9.7 (37.7)	1.4 (37.9)	23.2 (87.8)			18.3 (18.3)			
08/01	14.4 (81.4)									
08/02						18.5 (37.6)		2.2 (8.5)		
08/03		17.5 (55.2)					17.1 (35.4)			
08/04	0.4 (81.8)				7.9 (55.7)					
08/05			6.2 (44.1)			23.7 (61.3)			11.4 (11.4)	
08/06					1.2 (56.9)			15.2 (23.7)		
08/07		37.8 (93.0)	13.5 (57.6)				1.8 (37.2)			
08/08	1.4 (83.2)								7.5 (18.9)	
08/09						44.0 (105.3)		35.8 (59.5)		
08/10		1.3 (94.3)			13.7 (70.6)					
08/11	1.6 (84.8)		5.2 (62.8)							
08/12					20.7 (91.3)	19.1 (124.4)			10.5 (29.4)	
08/13				43.8 (131.6)				65.3 (124.8)		
08/14		7.1 (101.4)	1.8 (64.6)				11.8 (49.0)			
08/15	1.4 (86.2)								16.2 (45.6)	
08/16										
08/17							10.1 (59.1)			
08/18	10.2 (96.4)			3.9 (135.5)						
08/19			42.2 (106.8)						5.8 (51.4)	
08/20										
08/21										
08/22	21.9 (118.3)								8.0 (59.4)	
08/23										
08/24										
08/25	4.4 (122.7)									
08/26										
08/27										
08/28										
08/29	5.2 (127.9)									
08/30										

-Continued-

Appendix B.9. (page 2 of 2).

Period and (Cumulative) harvest ^a											
Date	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
07/18											
07/19											
07/20											
07/21											
07/22											
07/23											
07/24			1.0 (1.0)								
07/25											
07/26											
07/27			1.8 (2.8)								
07/28		4.4 (4.4)									
07/29											
07/30				15.3 (15.3)							
07/31			1.7 (4.5)					0.7 (0.7)			
08/01		0.2 (4.5)									
08/02				3.0 (18.3)				0.4 (1.1)			
08/03			11.2 (15.7)								
08/04		48.8 (53.3)									
08/05								12.7 (13.8)			
08/06				7.4 (25.7)					1.8 (1.8)	2.0 (2.0)	
08/07			7.5 (23.2)					10.4 (24.2)			
08/08		3.8 (57.2)									
08/09	32.5 (32.5)			9.2 (34.9)				8.1 (32.3)	4.3 (6.1)		
08/10											
08/11		2.5 (59.7)						4.5 (36.8)		3.9 (5.9)	
08/12									6.2 (12.3)		
08/13				1.4 (36.3)				10.4 (47.2)		6.7 (12.6)	
08/14											
08/15		14.9 (74.7)						14.8 (62.0)	15.1 (27.4)		
08/16				4.1 (40.4)						9.4 (22.0)	
08/17											
08/18								16.7 (78.7)		5.5 (27.5)	
08/19	0.5 (33.0)								1.3 (28.8)		
08/20			4.1 (27.3)	2.8 (43.2)							
08/21								0.7 (79.4)			
08/22		2.9 (77.6)							1.3 (30.1)		
08/23	6.9 (39.9)			14.7 (57.9)							
08/24											
08/25		0.3 (77.9)									
08/26	4.1 (44.0)								3.5 (33.6)		
08/27				1.8 (59.7)							
08/28											
08/29											
08/30	1.5 (45.5)										

^a Period and cumulative catches in thousands of fish. Some harvests of fall chum salmon may have occurred before 7/18. No commercial periods were allowed in 1987, 1992, 1993, 1994, and 1998.

Appendix B.10. Commercial fall chum salmon harvest by statistical area, Lower Yukon Area, 1983-1998. ^a

District 1									
Year	334-11	334-12	334-13	334-14	334-15	334-16	334-17	334-18	Total
1983	135	10,300	2,224	10,460	35,824	19,985	24,816	20,627	124,371
1984	315	24,914	2,488	16,234	13,536	6,873	9,390	5,001	78,751
1985	594	34,332	6,035	36,885	43,022	1,485	5,898	1,697	129,948
1986	376	9,891	3,032	2,683	21,058	4,091	12,004	6,217	59,352
1987	0	0	0	0	0	0	0	0	0
1988	10,217	6,953	2,625	206	6,692	3,905	9,526	5,405	45,529
1989	0	2,929	1,420	5,577	26,611	17,477	15,526	8,336	77,876
1990	255	3,690	501	1,167	7,927	5,618	4,695	3,484	27,337
1991	75	11,976	3,036	5,586	9,968	8,040	11,880	9,163	59,724
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	1,674	6,766	6,892	11,909	16,450	1,696	23,722	10,236	79,345
1996	0	2,686	2,333	1,243	4,561	9,976	8,504	4,326	33,629
1997	0	2,870	3,452	3,768	3,943	1,596	6,747	5,107	27,483
1998	0	0	0	0	0	0	0	0	0
5 Year Average									
1993-1997	335	2,464	2,535	3,384	4,991	2,654	7,795	3,934	28,091

District 2							District 3		
Year	334-21	334-22	334-23	334-24	334-25	Total	334-31	334-32	Total
1983	17,245	4,673	24,132	22,072	17,523	85,645	4,607	5,411	10,018
1984	10,951	22,942	7,622	19,183	10,105	70,803	6,429	0	6,429
1985	9,131	10,607	3,530	5,859	11,363	40,490	4,173	991	5,164
1986	6,472	16,377	5,212	11,352	11,894	51,307	2,793	0	2,793
1987	0	0	0	0	0	0	0	0	0
1988	5,077	13,215	5,385	4,283	3,901	31,861	1,748	342	2,090
1989	12,005	34,268	15,001	19,029	17,603	97,906	15,153	179	15,332
1990	6,311	8,298	5,403	10,147	7,014	37,173	1,863	1,852	3,715
1991	10,584	23,195	14,291	28,306	26,252	102,628	7,209	2,004	9,213
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	147	54,231	20,018	16,435	0	90,831	0	0	0
1996	1,960	14,349	4,184	7,634	1,524	29,651	0	0	0
1997	5,040	9,827	2,316	5,972	1,171	24,326	0	0	0
1998	0	0	0	0	0	0	0	0	0
5 Year Average									
1993-1997	1,429	15,681	5,304	6,008	539	28,962	0	0	0

^a Includes ADF&G test fish sales through 1990.

Appendix B.11. Commercial coho salmon harvest by statistical area, Lower Yukon Area, 1983-1998. ^a

District 1									
Year	334-11	334-12	334-13	334-14	334-15	334-16	334-17	334-18	Total
1983	16	567	86	463	1,123	56	1,532	752	4,595
1984	151	6,743	1,233	3,101	5,925	4,151	4,389	3,779	29,472
1985	585	6,187	1,673	8,320	5,304	936	2,153	2,517	27,675
1986	83	1,974	805	383	7,056	6,525	5,722	2,276	24,824
1987	0	0	0	0	0	0	0	0	0
1988	1,652	5,831	1,866	392	9,166	9,848	4,831	2,849	36,435
1989	0	1,822	306	1,115	5,830	4,696	7,680	3,223	24,672
1990	4	736	301	1,684	2,108	2,530	2,429	3,562	13,354
1991	30	4,302	1,072	4,432	8,130	19,630	7,980	8,519	54,095
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	883	2,472	1,833	2,439	2,454	1,006	8,953	1,585	21,625
1996	0	1,555	1,564	854	3,995	9,634	8,068	2,035	27,705
1997	0	1,355	2,322	2,414	2,742	4,153	5,180	3,284	21,450
1998	0	0	0	0	0	0	0	0	0
5 Year Average 1993-1997	177	1,076	1,144	1,141	1,838	2,959	4,440	1,381	14,156

District 2							District 3		
Year	334-21	334-22	334-23	334-24	334-25	Total	334-31	334-32	Total
1983	1,549	140	715	114	39	2,557	0	0	0
1984	4,736	26,506	5,514	4,556	1,752	43,064	621	0	621
1985	3,369	5,052	4,394	1,077	3,233	17,125	171	0	171
1986	3,074	9,317	2,250	4,117	2,439	21,197	793	0	793
1987	0	0	0	0	0	0	0	0	0
1988	3,844	12,503	4,891	7,141	6,397	34,776	1,291	128	1,419
1989	6,199	18,427	3,668	4,262	5,966	38,522	3,978	10	3,988
1990	1,226	11,364	962	2,032	851	16,435	752	166	918
1991	8,746	17,939	3,587	6,094	4,532	40,898	1,427	478	1,905
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	115	12,154	2,951	3,268	0	18,488	0	0	0
1996	761	12,155	2,755	4,409	894	20,974	0	0	0
1997	2,197	6,449	1,238	3,025	147	13,056	0	0	0
1998	0	1	0	0	0	1	0	0	0
5 Year Average 1993-1997	615	6,152	1,389	2,140	208	10,504	0	0	0

^a Districts 1 and 2 commercial harvest may include ADF&G test fish sales through 1990.

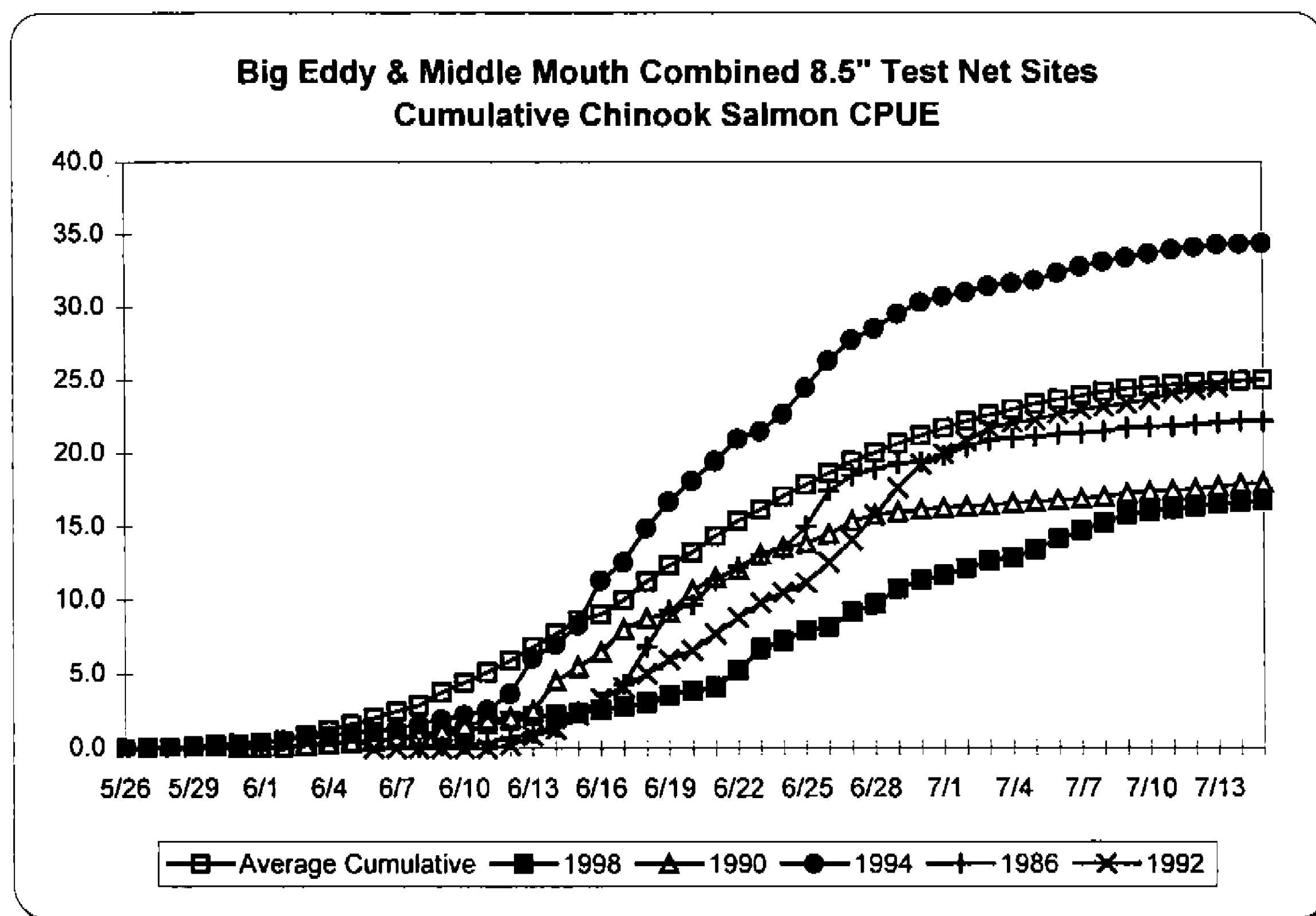
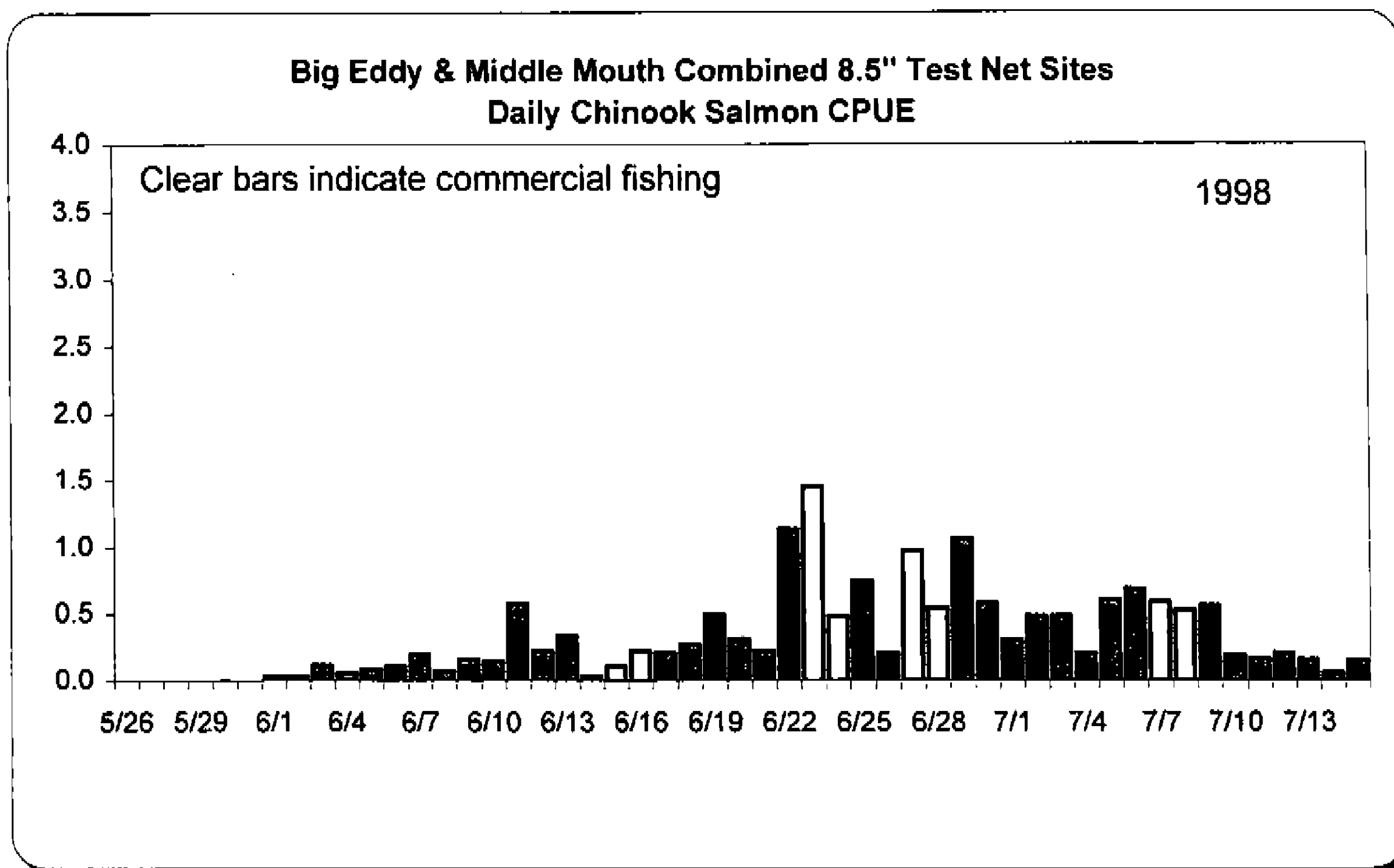
Appendix B.12. Chinook and summer chum salmon set gillnet test fishing data by day, Big Eddy and Middle Mouth projects, Lower Yukon River, 1998.

Chinook Salmon in 8.5" Gillnets							Summer Chum Salmon in 5.5" Gillnets						
Date	Average 1980-1997		1998				Date	Average 1980-1997		1998			
	Prop.	Cumulative CPUE	Daily Catch	Daily CPUE	Cumulative CPUE	Comm/period Hrs Fished District 1		Prop.	Cumulative CPUE	Daily Catch	Daily CPUE	Cumulative CPUE	Comm/period Hrs Fished District 1
26-May	0.00	0.00					26-May	0.00	0.00				
27-May	0.00	0.08					27-May	0.00	0.09				
28-May	0.00	0.04					28-May	0.00	0.25				
29-May	0.00	0.11	0	0.00	0.00		29-May	0.01	0.57	0	0.00	0.00	
30-May	0.01	0.22	0	0.00	0.00		30-May	0.02	1.40	1	0.03	0.03	
31-May	0.01	0.29	0	0.00	0.00		31-May	0.02	1.47	1	0.02	0.05	
1-Jun	0.01	0.39	2	0.04	0.04		1-Jun	0.02	1.73	5	0.10	0.15	
2-Jun	0.02	0.50	2	0.04	0.08		2-Jun	0.02	2.02	6	0.13	0.28	
3-Jun	0.03	0.83	9	0.12	0.20		3-Jun	0.03	2.59	22	0.28	0.56	
4-Jun	0.04	1.19	6	0.06	0.26		4-Jun	0.04	3.26	27	0.28	0.84	
5-Jun	0.06	1.59	9	0.09	0.35		5-Jun	0.05	4.01	34	0.35	1.19	
6-Jun	0.08	2.03	11	0.11	0.46		6-Jun	0.06	5.10	64	0.67	1.86	
7-Jun	0.09	2.49	19	0.20	0.66		7-Jun	0.08	6.37	61	0.64	2.50	
8-Jun	0.11	2.89	8	0.08	0.74		8-Jun	0.09	7.66	38	0.40	2.90	
9-Jun	0.14	3.77	16	0.17	0.91		9-Jun	0.11	9.60	45	0.47	3.37	
10-Jun	0.16	4.43	14	0.15	1.06		10-Jun	0.15	12.36	12	0.13	3.50	
11-Jun	0.19	5.14	56	0.58	1.64		11-Jun	0.16	13.43	198	2.06	5.56	
12-Jun	0.22	5.94	22	0.23	1.87		12-Jun	0.19	15.77	80	0.83	6.39	
13-Jun	0.26	6.82	33	0.34	2.21		13-Jun	0.21	17.23	98	1.02	7.41	
14-Jun	0.29	7.71	4	0.04	2.25		14-Jun	0.23	19.57	23	0.24	7.65	
15-Jun	0.33	8.64	11	0.11	2.36	6 u	15-Jun	0.27	22.37	11	0.11	7.76	
16-Jun	0.35	9.06	22	0.23	2.59	3 u	16-Jun	0.30	25.24	69	0.72	8.48	
17-Jun	0.39	10.01	20	0.21	2.80		17-Jun	0.34	28.65	63	0.66	9.14	
18-Jun	0.43	11.27	27	0.28	3.08		18-Jun	0.39	32.43	55	0.57	9.71	
19-Jun	0.48	12.37	48	0.50	3.58		19-Jun	0.40	33.75	216	2.25	11.96	
20-Jun	0.51	13.28	31	0.32	3.90		20-Jun	0.44	36.68	169	1.76	13.72	
21-Jun	0.56	14.37	22	0.23	4.13		21-Jun	0.48	39.74	47	0.49	14.21	
22-Jun	0.60	15.41	109	1.14	5.27		22-Jun	0.51	42.85	395	4.11	18.32	
23-Jun	0.63	16.17	140	1.46	6.73	6 u	23-Jun	0.55	45.81	350	3.65	21.97	
24-Jun	0.67	17.07	47	0.49	7.22	3 u	24-Jun	0.58	48.48	92	0.96	22.93	
25-Jun	0.70	17.88	72	0.75	7.97		25-Jun	0.61	51.24	288	3.00	25.93	
26-Jun	0.73	18.64	20	0.21	8.18		26-Jun	0.65	54.19	115	1.20	27.13	
27-Jun	0.76	19.45	94	0.98	9.16	6 u	27-Jun	0.68	56.52	243	2.53	29.66	
28-Jun	0.79	20.05	53	0.55	9.71	3 u	28-Jun	0.70	58.70	119	1.24	30.90	
29-Jun	0.81	20.65	103	1.07	10.78		29-Jun	0.73	60.93	561	5.84	36.74	
30-Jun	0.84	21.18	56	0.58	11.36		30-Jun	0.75	62.80	490	5.10	41.84	1 r
1-Jul	0.86	21.70	30	0.31	11.67		1-Jul	0.77	64.78	125	1.30	43.14	2 r
2-Jul	0.88	22.18	47	0.49	12.16		2-Jul	0.80	67.01	149	1.55	44.69	
3-Jul	0.90	22.60	47	0.49	12.65		3-Jul	0.83	69.09	145	1.51	46.20	
4-Jul	0.91	22.99	20	0.21	12.86		4-Jul	0.84	70.61	40	0.42	46.62	
5-Jul	0.93	23.36	59	0.61	13.47		5-Jul	0.87	72.67	82	0.85	47.47	
6-Jul	0.94	23.65	66	0.69	14.16		6-Jul	0.90	74.95	263	2.74	50.21	
7-Jul	0.95	23.93	57	0.59	14.75	6 u	7-Jul	0.92	76.55	144	1.50	51.71	
8-Jul	0.96	24.20	51	0.53	15.28		8-Jul	0.93	78.12	90	0.94	52.65	
9-Jul	0.97	24.43	54	0.56	15.84		9-Jul	0.95	79.63	252	2.63	55.28	
10-Jul	0.98	24.56	18	0.19	16.03		10-Jul	0.96	80.52	107	1.11	56.39	
11-Jul	0.99	24.68	16	0.17	16.20		11-Jul	0.97	81.21	36	0.38	56.77	
12-Jul	0.99	24.78	20	0.21	16.41		12-Jul	0.98	81.84	129	1.34	58.11	
13-Jul	0.99	24.88	15	0.16	16.57		13-Jul	0.99	82.47	53	0.55	58.66	
14-Jul	1.00	24.96	6	0.06	16.63		14-Jul	0.99	83.19	16	0.17	58.83	
15-Jul	1.00	25.01	14	0.15	16.78		15-Jul	1.00	83.65	26	0.27	59.10	
25.01			1,606		16.78		83.65			5,655		59.10	

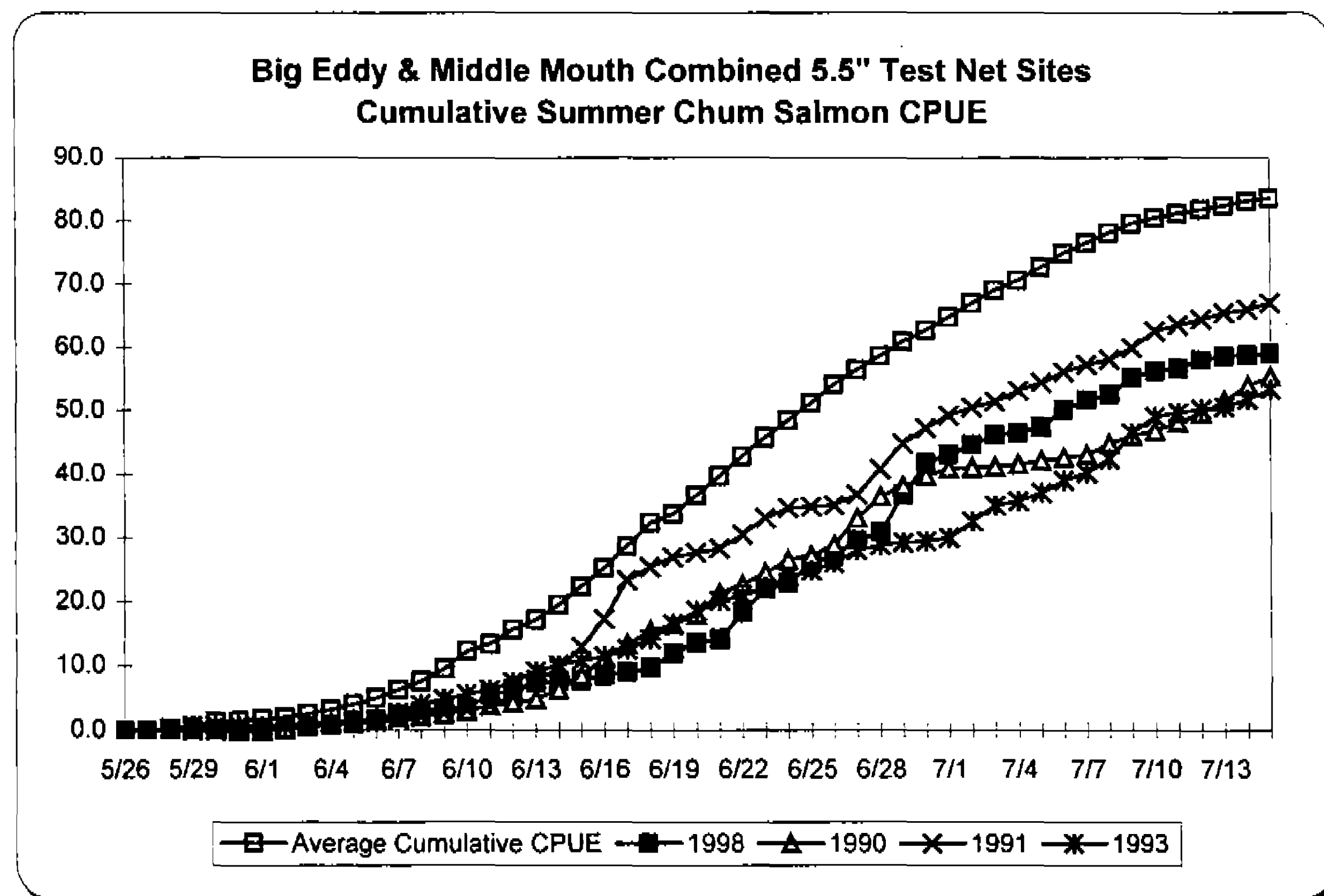
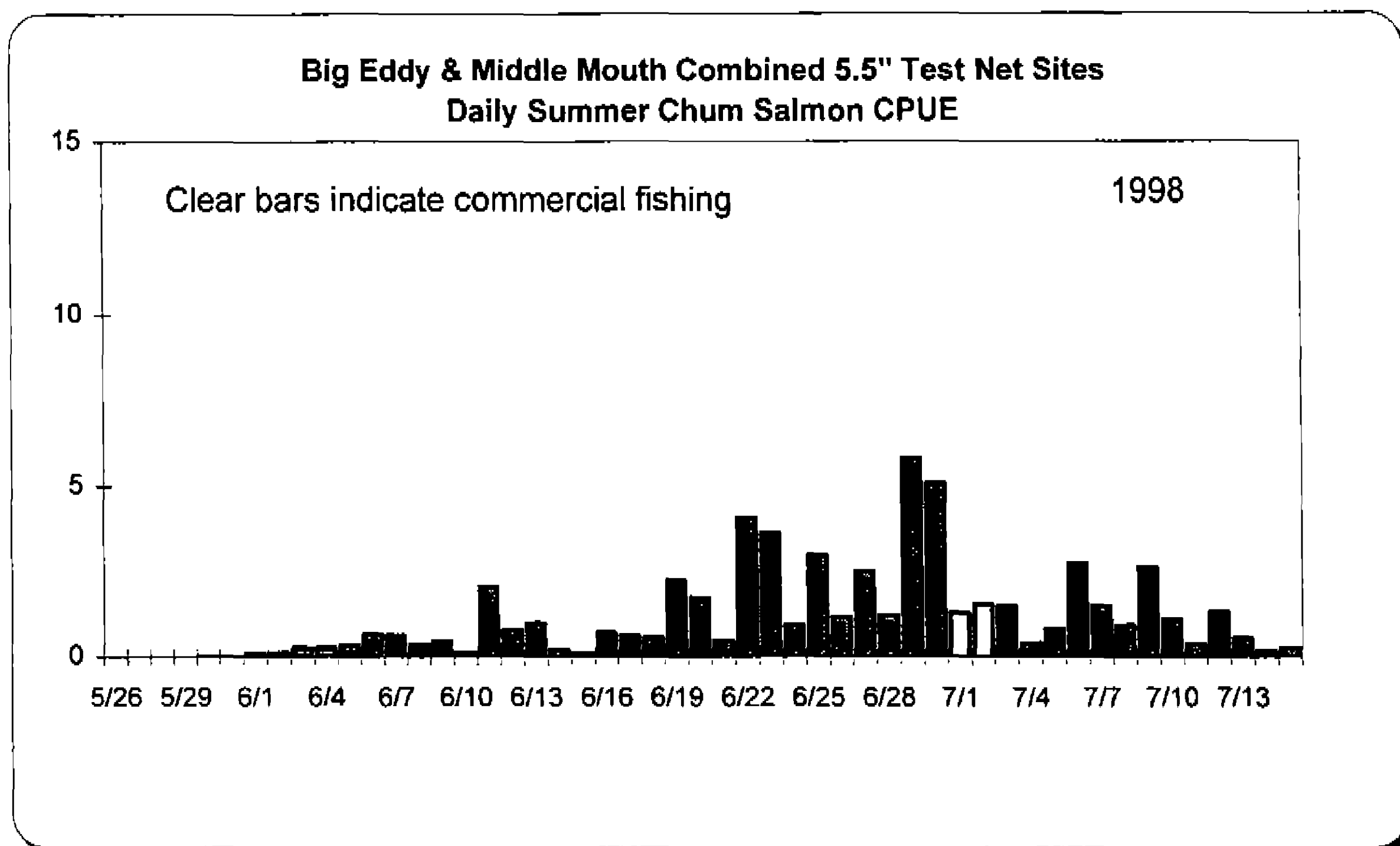
u Unrestricted mesh size period.

r Restricted mesh size period.

Appendix B.13. Daily test fish CPUE for chinook salmon test fish sites (above). Cumulative test fish CPUE for chinook salmon test fish sites (below) compared to the 1980-1997 average CPUE.



Appendix B.14. Daily test fish CPUE for summer chum salmon test fish sites (above).
 Cumulative test fish CPUE for summer chum salmon test fish sites (below)
 compared to the 1980-1997 average CPUE.



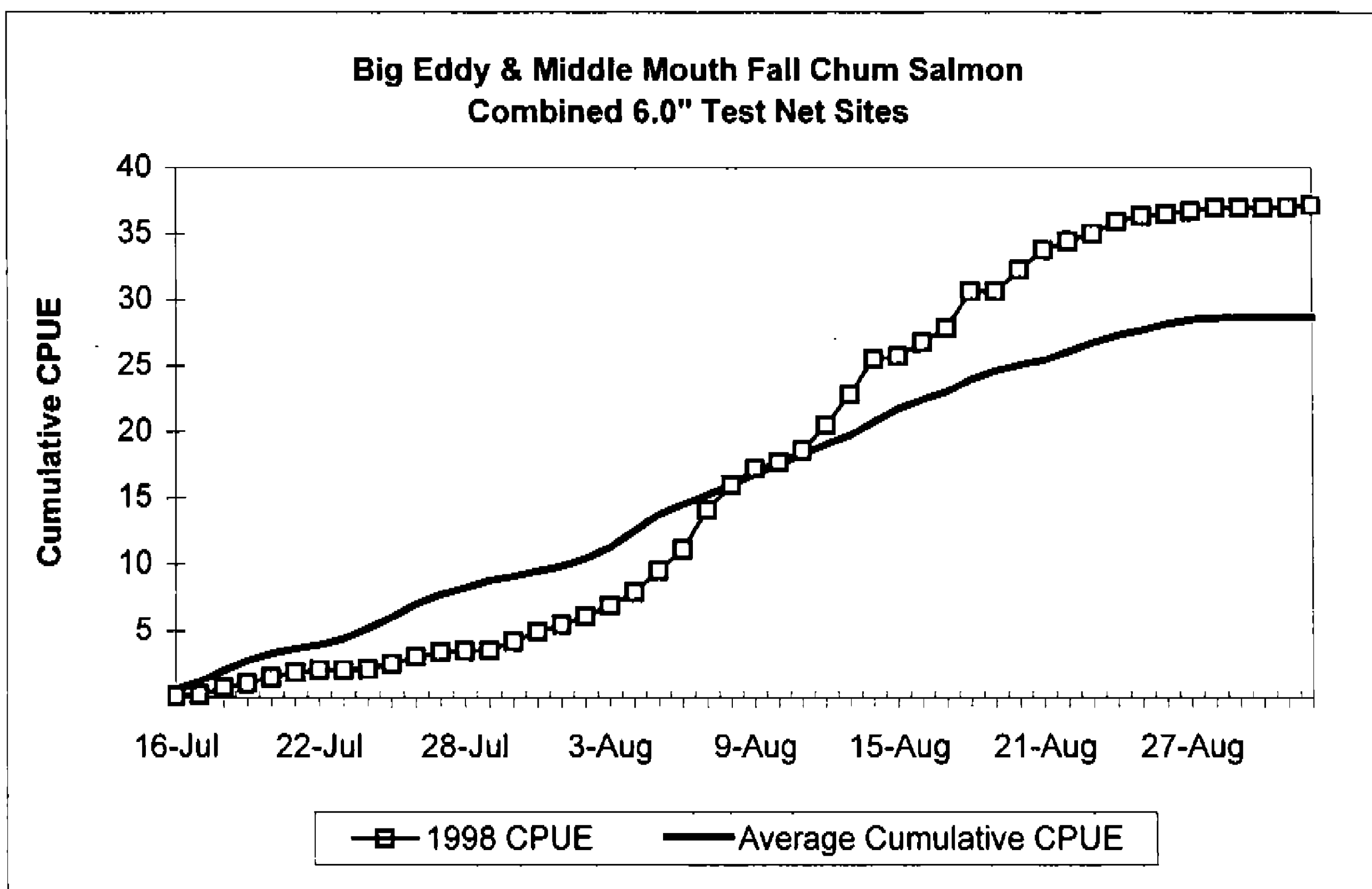
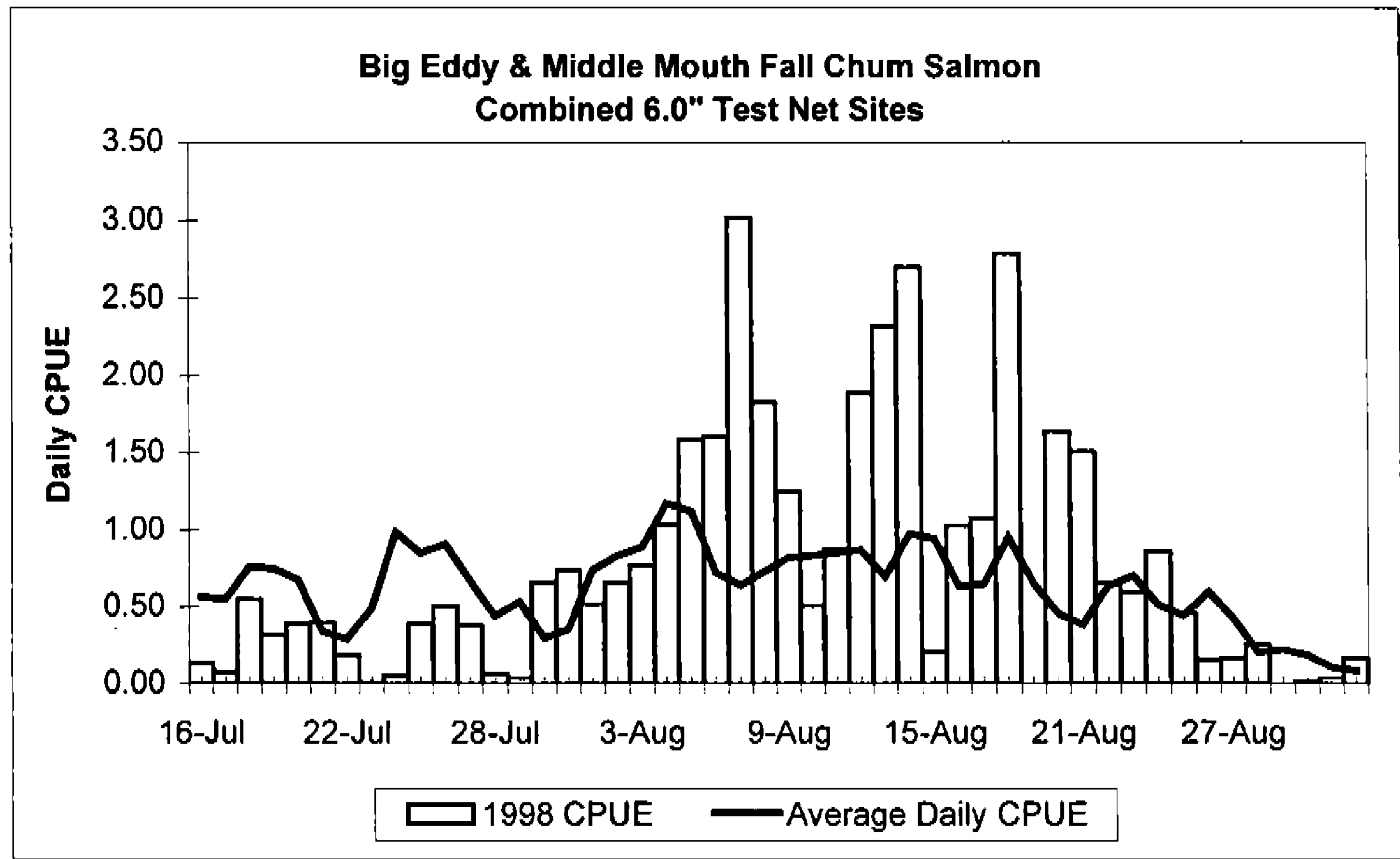
Appendix B.15. Historical daily and CPUE for fall chum and coho salmon, Lower Yukon River set gillnet test fishery, 1988 to 1997 average, compared to 1998.

Fall Chum Salmon							Coho Salmon						
1988 to 1997							1988 to 1997						
Average ^a			1998				Average ^a				1998		
Date	Daily CPUE	Percent	Cumulative CPUE ^b	Daily CPUE	Percent	Cumulative CPUE	Date	Daily CPUE	Percent	Cumulative CPUE ^b	Daily CPUE	Percent	Cumulative CPUE
16-Jul	0.57	0.02	0.63	0.14	0.00	0.14	16-Jul	0.00	0.00	0.00	0.00	0.00	0.00
17-Jul	0.55	0.04	1.21	0.08	0.01	0.22	17-Jul	0.00	0.00	0.00	0.00	0.00	0.00
18-Jul	0.77	0.07	2.02	0.55	0.02	0.77	18-Jul	0.00	0.00	0.00	0.00	0.00	0.00
19-Jul	0.75	0.10	2.74	0.32	0.03	1.09	19-Jul	0.00	0.00	0.00	0.00	0.00	0.00
20-Jul	0.68	0.12	3.31	0.39	0.04	1.48	20-Jul	0.00	0.00	0.00	0.00	0.00	0.00
21-Jul	0.34	0.13	3.64	0.40	0.05	1.88	21-Jul	0.00	0.00	0.00	0.01	0.00	0.01
22-Jul	0.29	0.14	3.94	0.19	0.06	2.07	22-Jul	0.00	0.00	0.00	0.01	0.00	0.02
23-Jul	0.49	0.15	4.40	0.01	0.06	2.08	23-Jul	0.00	0.00	0.01	0.00	0.00	0.02
24-Jul	0.99	0.18	5.18	0.06	0.06	2.14	24-Jul	0.03	0.00	0.03	0.00	0.00	0.02
25-Jul	0.85	0.21	6.01	0.39	0.07	2.53	25-Jul	0.02	0.00	0.06	0.00	0.00	0.02
26-Jul	0.91	0.24	7.00	0.51	0.08	3.04	26-Jul	0.04	0.01	0.10	0.00	0.00	0.02
27-Jul	0.67	0.27	7.75	0.38	0.09	3.42	27-Jul	0.03	0.01	0.13	0.00	0.00	0.02
28-Jul	0.45	0.29	8.24	0.07	0.09	3.49	28-Jul	0.02	0.01	0.15	0.00	0.00	0.02
29-Jul	0.54	0.31	8.80	0.04	0.09	3.53	29-Jul	0.05	0.01	0.20	0.00	0.00	0.02
30-Jul	0.30	0.32	9.12	0.66	0.11	4.19	30-Jul	0.06	0.01	0.26	0.06	0.00	0.08
31-Jul	0.36	0.33	9.50	0.74	0.13	4.93	31-Jul	0.05	0.02	0.30	0.03	0.01	0.11
1-Aug	0.74	0.34	9.83	0.52	0.15	5.45	1-Aug	0.08	0.02	0.38	0.01	0.01	0.12
2-Aug	0.83	0.36	10.42	0.66	0.16	6.11	2-Aug	0.15	0.03	0.53	0.05	0.01	0.17
3-Aug	0.89	0.39	11.24	0.77	0.18	6.88	3-Aug	0.22	0.04	0.75	0.14	0.01	0.31
4-Aug	1.18	0.44	12.51	1.04	0.21	7.92	4-Aug	0.21	0.05	0.96	0.19	0.02	0.50
5-Aug	1.13	0.48	13.74	1.59	0.25	9.51	5-Aug	0.23	0.06	1.19	0.31	0.04	0.81
6-Aug	0.72	0.51	14.53	1.61	0.30	11.12	6-Aug	0.18	0.07	1.38	0.51	0.06	1.32
7-Aug	0.64	0.53	15.23	3.02	0.38	14.14	7-Aug	0.26	0.09	1.64	0.83	0.10	2.15
8-Aug	0.73	0.56	16.00	1.83	0.43	15.97	8-Aug	0.34	0.10	1.98	0.85	0.14	3.00
9-Aug	0.82	0.59	16.80	1.25	0.46	17.22	9-Aug	0.42	0.13	2.39	0.68	0.18	3.68
10-Aug	0.84	0.61	17.55	0.51	0.47	17.73	10-Aug	0.50	0.15	2.90	0.49	0.20	4.17
11-Aug	0.85	0.64	18.28	0.88	0.50	18.61	11-Aug	0.75	0.19	3.65	0.67	0.23	4.84
12-Aug	0.87	0.66	19.06	1.89	0.55	20.50	12-Aug	0.84	0.24	4.48	0.95	0.28	5.79
13-Aug	0.70	0.69	19.73	2.32	0.61	22.82	13-Aug	0.66	0.27	5.15	1.03	0.32	6.82
14-Aug	0.98	0.72	20.75	2.70	0.68	25.52	14-Aug	1.17	0.34	6.32	2.41	0.44	9.23
15-Aug	0.95	0.76	21.76	0.21	0.69	25.73	15-Aug	1.19	0.40	7.50	0.25	0.45	9.48
16-Aug	0.64	0.78	22.44	1.03	0.72	26.76	16-Aug	0.75	0.44	8.25	0.78	0.49	10.26
17-Aug	0.65	0.80	23.03	1.08	0.74	27.84	17-Aug	0.85	0.48	9.11	1.81	0.58	12.07
18-Aug	0.96	0.83	23.94	2.79	0.82	30.63	18-Aug	1.41	0.56	10.52	2.75	0.71	14.82
19-Aug	0.65	0.86	24.60	-	0.82	30.63	19-Aug	1.07	0.61	11.59	-	0.71	14.82
20-Aug	0.46	0.87	25.06	1.64	0.86	32.27	20-Aug	0.73	0.65	12.32	0.32	0.72	15.14
21-Aug	0.39	0.89	25.44	1.51	0.90	33.78	21-Aug	0.81	0.70	13.13	0.98	0.77	16.12
22-Aug	0.64	0.91	26.08	0.66	0.92	34.44	22-Aug	0.92	0.75	14.05	0.73	0.80	16.85
23-Aug	0.70	0.93	26.78	0.60	0.94	35.04	23-Aug	1.18	0.81	15.23	0.68	0.84	17.53
24-Aug	0.52	0.95	27.30	0.86	0.96	35.90	24-Aug	1.08	0.87	16.31	0.71	0.87	18.24
25-Aug	0.45	0.96	27.70	0.46	0.97	36.36	25-Aug	0.68	0.90	16.91	0.40	0.89	18.64
26-Aug	0.60	0.98	28.16	0.16	0.98	36.52	26-Aug	1.03	0.94	17.71	0.27	0.90	18.91
27-Aug	0.43	0.99	28.50	0.17	0.98	36.69	27-Aug	0.92	0.98	18.42	0.23	0.91	19.14
28-Aug	0.21	1.00	28.61	0.26	0.99	36.95	28-Aug	0.52	0.99	18.72	0.07	0.92	19.21
29-Aug	0.23	1.00	28.66	0.00	0.99	36.95	29-Aug	0.19	1.00	18.76	0.06	0.92	19.27
30-Aug	0.19	1.00	28.68	0.02	0.99	36.97	30-Aug	0.28	1.00	18.79	0.04	0.92	19.31
31-Aug	0.11	1.00	28.70	0.04	0.99	37.01	31-Aug	0.32	1.00	18.82	0.21	0.93	19.52
1-Sep	0.09	1.00	28.71	0.17	0.99	37.18	1-Sep	0.16	1.00	18.84	0.88	0.97	20.40
2-Sep		1.00	28.71	0.00	0.99	37.18	2-Sep		1.00	18.84	0.08	0.98	20.48
3-Sep		1.00	28.71	0.08	1.00	37.26	3-Sep		1.00	18.84	0.00	0.98	20.48
4-Sep		1.00	28.71	0.02	1.00	37.28	4-Sep		1.00	18.84	0.04	0.98	20.52
5-Sep		1.00	28.71	0.04	1.00	37.32	5-Sep		1.00	18.84	0.31	0.99	20.83
6-Sep		1.00	28.71	0.06	1.00	37.38	6-Sep		1.00	18.84	0.08	1.00	20.91
7-Sep		1.00	28.71	0.04	1.00	37.42	7-Sep		1.00	18.84	0.08	1.00	20.99

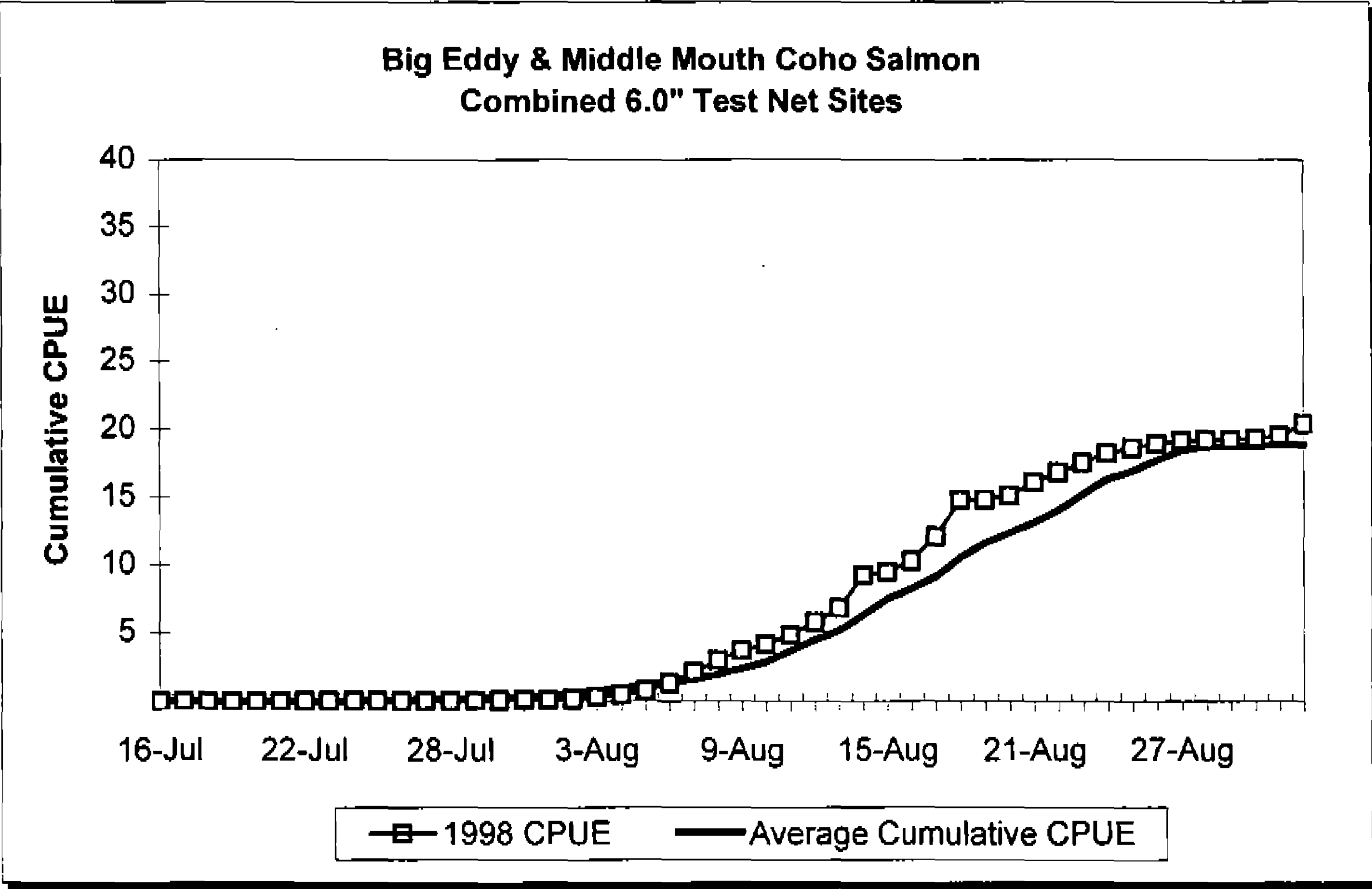
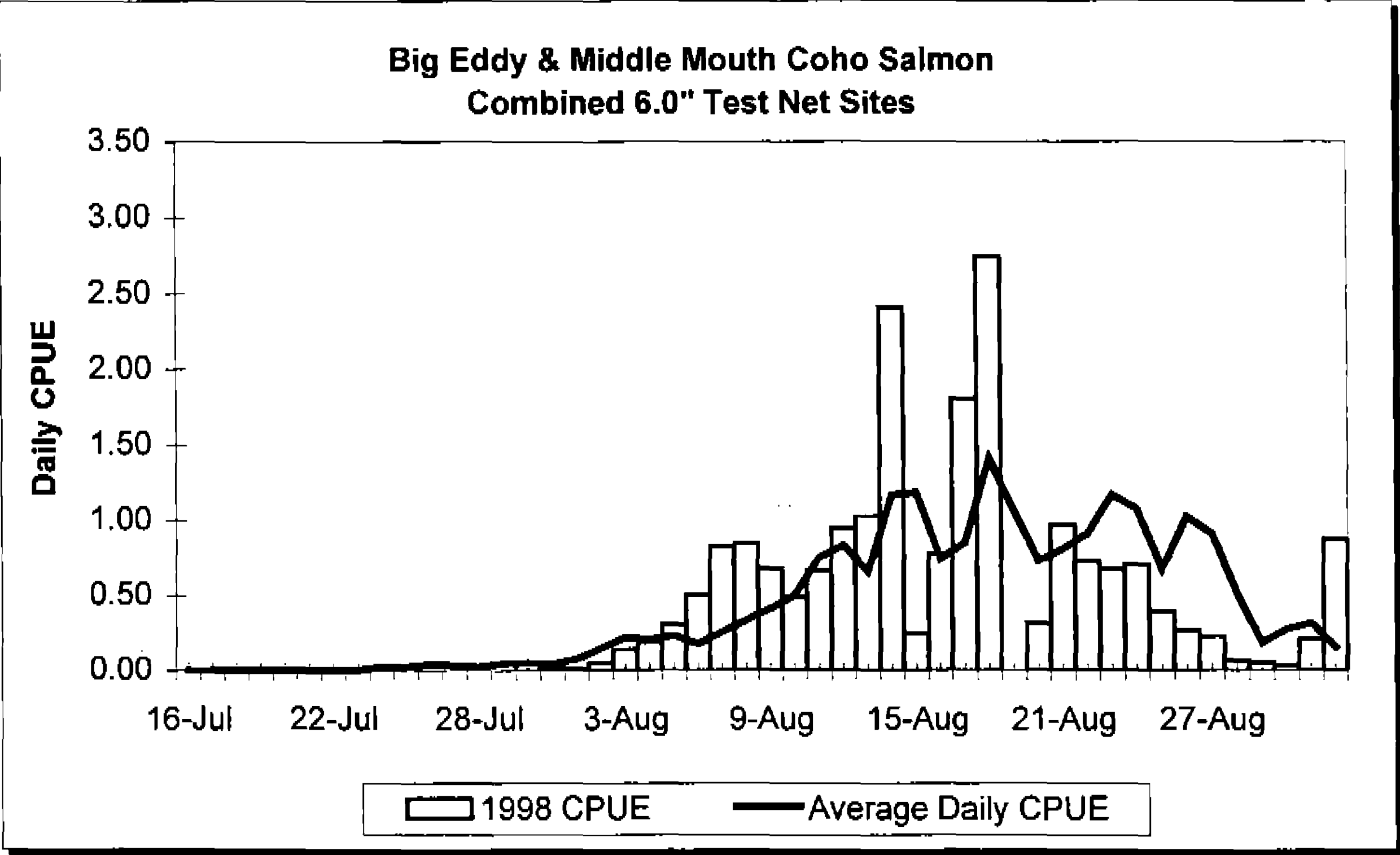
^a Does not include 1994. Differences in the termination dates of the project confounds computation of the historical daily cumulative percent and average. As a convenience the historical daily cumulative percent and average was computed by assuming that 100 percent of the run was completed on the date of project termination.

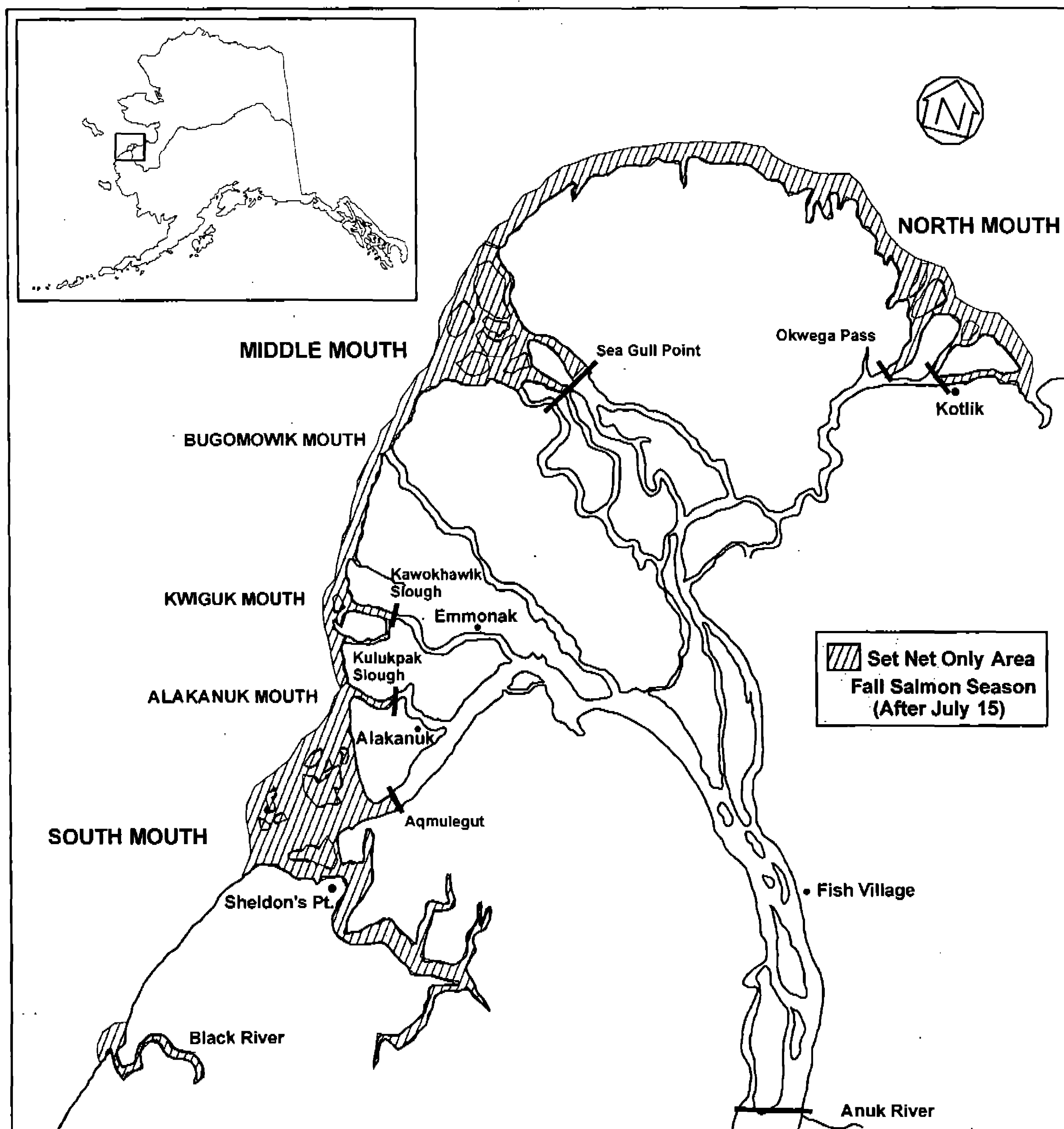
^b The box indicates the first to the third quartile of the cumulative catch-per-unit-effort (CPUE). The center box indicates the median date of the cumulative CPUE.

Appendix B.16. The 1998 daily and cumulative fall chum salmon CPUE, compared to the 1988 to 1997 average daily and cumulative Lower Yukon River set gillnet test fishery.



Appendix B.17. The 1998 daily and cumulative coho salmon CPUE, compared to the 1988 to 1997 average daily and cumulative Lower Yukon River set gillnet test fishery.





Appendix B.18. Set Gillnet Only Area of District 1, Lower Yukon River, 1998.

APPENDIX C

UPPER YUKON AREA SALMON

Appendix C.1. Commercial salmon sales and estimated harvest by statistical area, all gears combined, Upper Yukon Area, 1998. ^a

BEACH SEINE, PURSE SEINE, SET GILLNET AND FISH WHEEL COMBINED

Statistical Area	Number of Fishermen ^b	Chinook			Summer Chum			Fall Chum			Coho		
		Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest
334-42	0	-	-	-	-	-	-	-	-	-	-	-	-
334-43	0	-	-	-	-	-	-	-	-	-	-	-	-
334-44	0	-	-	-	-	-	-	-	-	-	-	-	-
334-45	0	-	-	-	-	-	-	-	-	-	-	-	-
334-46	0	-	-	-	-	-	-	-	-	-	-	-	-
334-47 ^c	0	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal District 4 ^d</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
334-51	0	0	0	0	0	0	0	-	-	-	-	-	-
334-52	9	279	0	279	37	13	51	-	-	-	-	-	-
334-53	6	196	0	196	59	0	59	-	-	-	-	-	-
334-54	1	11	0	11	0	0	0	-	-	-	-	-	-
334-55	2	31	0	31	0	0	0	-	-	-	-	-	-
<i>Subtotal District 5</i>	18	517	0	517	96	13	110	0	0	0	0	0	0
334-61	1	217	0	217	56	0	56	-	-	-	-	-	-
334-62	6	431	208	496	202	109	337	-	-	-	-	-	-
334-63	3	234	52	250	139	31	177	-	-	-	-	-	-
<i>Subtotal District 6</i>	10	882	260	963	397	140	570	0	0	0	0	0	0
Total Upper Yukon Area	28	1,399	260	1,480	493	153	680	0	0	0	0	0	0

^a Harvest reported in numbers of fish sold in the round and pounds of salmon roe sold. Unless otherwise noted, the estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

^b Number of unique permits fished by statistical area, district or area. Totals may not add up due to transfers between statistical areas.

^c Statistical Area 334-47 (Anvik River) is the only location beach seines and purse seine gear is allowed.

^d The estimated harvest of summer chum salmon for District 4, except Statistical Area 334-47 (Anvik River), is the estimated number of males and females harvested to produce the roe sold.

Appendix C.2. Commercial set gillnet salmon sales and estimated harvest by statistical area, Upper Yukon Area, 1998. ^a

SET GILLNET

Statistical Area	Number of Fishermen ^b	Chinook			Summer Chum			Fall Chum			Coho		
		Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest
334-42	0	-	-	-	-	-	-	-	-	-	-	-	-
334-43	0	-	-	-	-	-	-	-	-	-	-	-	-
334-44	0	-	-	-	-	-	-	-	-	-	-	-	-
334-45	0	-	-	-	-	-	-	-	-	-	-	-	-
334-46	0	-	-	-	-	-	-	-	-	-	-	-	-
334-47	0	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal District 4 ^c</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
334-51	0	0	0	0	0	0	0	-	-	-	-	-	-
334-52	3	84	0	84	1	0	1	-	-	-	-	-	-
334-53	2	75	0	75	1	0	1	-	-	-	-	-	-
334-54	0	0	0	0	0	0	0	-	-	-	-	-	-
334-55	1	17	0	17	0	0	0	-	-	-	-	-	-
<i>Subtotal District 5</i>	6	176	0	176	2	0	2	0	0	0	0	0	0
334-61	0	0	0	0	0	0	0	-	-	-	-	-	-
334-62	0	0	0	0	0	0	0	-	-	-	-	-	-
334-63	0	0	0	0	0	0	0	-	-	-	-	-	-
<i>Subtotal District 6</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Upper Yukon Area	6	176	0	176	2	0	2	0	0	0	0	0	0

a Harvest reported in numbers of fish sold in the round and pounds of salmon roe sold. Unless otherwise noted, the estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

b Number of unique permits fished by statistical area, district or area. Totals may not add up due to transfers between statistical areas.

c The estimated harvest of summer chum salmon for District 4, except Statistical Area 334-47 (Anvik River), is the estimated number of males and females harvested to produce the roe sold.

Appendix C.3. Commercial fish wheel salmon sales and estimated harvest by statistical area, Upper Yukon Area, 1998. ^a

FISH WHEEL

Statistical Area	Number of Fishermen ^b	Chinook			Summer Chum			Fall Chum			Coho		
		Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest	Number	Roe	Estimated Harvest
334-42	0	-	-	-	-	-	-	-	-	-	-	-	-
334-43	0	-	-	-	-	-	-	-	-	-	-	-	-
334-44	0	-	-	-	-	-	-	-	-	-	-	-	-
334-45	0	-	-	-	-	-	-	-	-	-	-	-	-
334-46	0	-	-	-	-	-	-	-	-	-	-	-	-
334-47	0	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal District 4 ^c</i>	0	0	0	0	0	0	0	0	0	0	0	0	0
334-51	0	0	0	0	0	0	0	-	-	-	-	-	-
334-52	6	195	0	195	36	13	51	-	-	-	-	-	-
334-53	4	121	0	121	58	0	58	-	-	-	-	-	-
334-54	1	11	0	11	0	0	0	-	-	-	-	-	-
334-55	1	14	0	14	0	0	0	-	-	-	-	-	-
<i>Subtotal District 5</i>	12	341	0	341	94	13	109	0	0	0	0	0	0
334-61	1	217	0	217	56	0	56	-	-	-	-	-	-
334-62	6	431	208	496	202	109	337	-	-	-	-	-	-
334-63	3	234	52	250	139	31	177	-	-	-	-	-	-
<i>Subtotal District 6</i>	10	882	260	963	397	140	570	0	0	0	0	0	0
Total Upper Yukon Area	22	1,223	260	1,304	491	153	679	0	0	0	0	0	0

a Harvest reported in numbers of fish sold in the round and pounds of salmon roe sold. Unless otherwise noted, the estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

b Number of unique permits fished by statistical area, district or area. Totals may not add up due to transfers between statistical areas.

c The estimated harvest of summer chum salmon for District 4, except Statistical Area 334-47 (Anvik River), is the estimated number of males and females harvested to produce the roe sold.

Appendix C.4. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistrict 4-A, Upper Yukon Area, 1974 to 1998.

Year	334-41			334-44			334-45			334-46			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	0	-	0	-	-	-	-	-	-	-	-	-	0	-	0
1975	15	-	15	-	-	-	-	-	-	-	-	-	15	-	15
1976	44	-	44	-	-	-	-	-	-	-	-	-	44	-	44
1977	317	-	317	-	-	-	-	-	-	-	-	-	317	-	317
1978	183	-	183	-	-	-	-	-	-	-	-	-	183	-	183
1979	785	-	785	-	-	-	-	-	-	-	-	-	785	-	785
1980	352	-	352	-	-	-	-	-	-	-	-	-	352	-	352
1981	106	-	106	-	-	-	-	-	-	-	-	-	106	-	106
1982	78	-	78	-	-	-	-	-	-	-	-	-	78	-	78
1983	0	-	0	-	-	-	-	-	-	-	-	-	0	-	0
1984	2	-	2	-	-	-	-	-	-	-	-	-	2	-	2
1985	0	-	0	-	-	-	-	-	-	-	-	-	0	-	0
1986	11	-	11	-	-	-	-	-	-	-	-	-	11	-	11
1987	91	-	91	-	-	-	-	-	-	-	-	-	91	-	91
1988	19	-	19	-	-	-	-	-	-	-	-	-	19	-	19
1989	59	-	59	-	-	-	-	-	-	-	-	-	59	-	59
1990 ^d	-	-	-	0	8	2	0	0	0	52	0	52	52	8	54
1991	-	-	-	0	67	35	0	7	4	69	88	114	69	162	153
1992	-	-	-	0	0	0	0	15	9	0	71	41	0	86	50
1993	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
1994	-	-	-	0	0	0	0	0	0	0	14	7	0	14	7
1995	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
1996	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
1997	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
1998	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
<hr/>															
5 Year Average															
1993-1997	-	-	-	0	0	0	0	0	0	0	3	1	0	3	1

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.

d In 1990, Subdistrict 4-A (Statistical Area 334-41) was subdivided into Statistical Areas 334-44, 334-45 and 334-46.

Appendix C.5. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistricts 4-B and 4-C,
Upper Yukon Area, 1974 - 1998.

Year	334-42			334-43			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	685	-	685	-	-	-	685	-	685
1975	374	-	374	-	-	-	374	-	374
1976	365	-	365	-	-	-	365	-	365
1977	668	-	668	-	-	-	668	-	668
1978	425	-	425	-	-	-	425	-	425
1979 ^d	370	-	370	834	-	834	1,204	-	1,204
1980	549	-	549	620	-	620	1,169	-	1,169
1981	867	-	867	374	-	374	1,241	-	1,241
1982	497	-	497	512	-	512	1,009	-	1,009
1983	382	-	382	219	-	219	601	-	601
1984	272	-	272	687	-	687	959	-	959
1985	318	-	318	346	-	346	664	-	664
1986	100	-	100	391	-	391	491	-	491
1987	999	-	999	434	-	434	1,433	-	1,433
1988	1,599	-	1,599	1,541	-	1,541	3,140	-	3,140
1989	696	-	696	2,035	-	2,035	2,731	-	2,731
1990	784	0	784	2,700	0	2,700	3,484	0	3,484
1991	916	386	1,113	1,461	1,674	2,316	2,377	2,060	3,429
1992	623	482	818	1,028	1,705	1,526	1,651	2,187	2,344
1993	190	279	269	1,159	422	1,308	1,349	701	1,577
1994	389	374	539	1,827	176	1,897	2,216	550	2,436
1995	262	30	262	0	596	237	262	626	499
1996	11	202	103	34	0	34	45	202	137
1997	326	14	333	1,124	0	1,124	1,450	14	1,457
1998	0	0	0	0	0	0	0	0	0
5 Year Average									
1993-1997	236	180	301	829	239	920	1,064	419	1,221

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.

d In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.

Appendix C.6. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistricts 5-A, 5-B and 5-C, Upper Yukon Area, 1974 - 1998.

Year	334-51			334-52			334-53			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	2,284	-	2,284	379	-	379	-	-	-	2,663	-	2,663
1975	2,602	-	2,602	270	-	270	-	-	-	2,872	-	2,872
1976	2,843	-	2,843	308	-	308	-	-	-	3,151	-	3,151
1977	4,013	-	4,013	149	-	149	-	-	-	4,162	-	4,162
1978	2,838	-	2,838	241	-	241	-	-	-	3,079	-	3,079
1979	3,389	-	3,389	0	-	0	-	-	-	3,389	-	3,389
1980	4,554	-	4,554	337	-	337	-	-	-	4,891	-	4,891
1981 ^d	97	-	97	3,051	-	3,051	2,477	-	2,477	5,625	-	5,625
1982	61	-	61	2,352	-	2,352	2,277	-	2,277	4,690	-	4,690
1983	0	-	0	632	-	632	2,738	-	2,738	3,370	-	3,370
1984	128	-	128	1,589	-	1,589	1,568	-	1,568	3,285	-	3,285
1985	0	-	0	1,142	-	1,142	1,842	-	1,842	2,984	-	2,984
1986	0	-	0	1,552	-	1,552	875	-	875	2,427	-	2,427
1987	0	-	0	1,183	-	1,183	1,356	-	1,356	2,539	-	2,539
1988	0	-	0	1,498	-	1,498	1,477	-	1,477	2,975	-	2,975
1989	31	-	31	1,411	-	1,411	1,459	-	1,459	2,901	-	2,901
1990	0	0	0	1,630	47	1,642	1,180	0	1,180	2,810	47	2,822
1991	56	0	56	1,724	62	1,740	1,476	0	1,476	3,256	62	3,272
1992	0	0	0	1,276	7	1,279	2,119	0	2,119	3,395	7	3,398
1993	0	0	0	1,124	0	1,124	1,484	0	1,484	2,608	0	2,608
1994	0	0	0	1,648	10	1,653	1,641	0	1,641	3,289	10	3,294
1995	0	0	0	1,519	0	1,519	1,234	0	1,234	2,753	0	2,753
1996	0	0	0	898	455	1,216	1,151	63	1,183	2,049	518	2,399
1997	0	0	0	1,314	0	1,314	1,757	0	1,757	3,071	0	3,071
1998	0	0	0	279	0	279	196	0	196	475	0	475
5 Year Average												
1993-1997	0	0	0	1,301	93	1,365	1,453	13	1,460	2,754	106	2,825

a Harvest reported in numbers of fish sold in the round. Does not include estimates of illegal sales in 1987 of 653 chinook salmon.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).

Appendix C.7. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistrict 5-D, Upper Yukon Area, 1974 - 1998.

Year	334-54			334-55			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-
1981 ^d	749	-	749	-	-	-	749	-	749
1982	695	-	695	-	-	-	695	-	695
1983	236	-	236	-	-	-	236	-	236
1984	384	-	384	-	-	-	384	-	384
1985	434	-	434	-	-	-	434	-	434
1986	306	-	306	-	-	-	306	-	306
1987	566	-	566	-	-	-	566	-	566
1988	461	-	461	-	-	-	461	-	461
1989	385	-	385	-	-	-	385	-	385
1990 ^f	194	0	194	349	0	349	543	0	543
1991	192	0	192	362	0	362	554	0	554
1992	0	0	0	457	0	457	457	0	457
1993	0	0	0	400	0	400	400	0	400
1994	0	0	0	450	0	450	450	0	450
1995	0	0	0	489	0	489	489	0	489
1996	58	0	58	390	0	390	448	0	448
1997	262	0	262	345	0	345	607	0	607
1998	11	0	11	31	0	31	42	0	42
5 Year Average									
1993-1997	64	0	64	415	0	415	479	0	479

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) was subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).

f In 1990, Subdistrict 5-D (Statistical Area 334-54) was subdivided into two statistical areas, (Statistical Areas 334-54 and 334-55).

Appendix C.8. Commercial chinook salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974 - 1998.

Year	334-61			334-62			334-63			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	111	-	111	1,102	-	1,102	260	-	260	1,473	-	1,473
1975	77	-	77	153	-	153	270	-	270	500	-	500
1976	490	-	490	320	-	320	292	-	292	1,102	-	1,102
1977	405	-	405	365	-	365	238	-	238	1,008	-	1,008
1978	34	-	34	58	-	58	543	-	543	635	-	635
1979	102	-	102	336	-	336	334	-	334	772	-	772
1980	92	-	92	1,588	-	1,588	267	-	267	1,947	-	1,947
1981	438	-	438	366	-	366	183	-	183	987	-	987
1982	414	-	414	309	-	309	258	-	258	981	-	981
1983	249	-	249	364	-	364	298	-	298	911	-	911
1984	0	-	0	375	-	375	492	-	492	867	-	867
1985	15	-	15	560	-	560	567	-	567	1,142	-	1,142
1986	0	-	0	597	-	597	353	-	353	950	-	950
1987	0	-	0	600	-	600	602	-	602	1,202	-	1,202
1988	305	-	305	253	-	253	204	-	204	762	-	762
1989	809	-	809	614	-	614	318	-	318	1,741	-	1,741
1990	326	0	326	1,243	1,354	1,565	188	322	265	1,757	1,676	2,156
1991	117	0	117	450	1,365	791	119	180	164	686	1,545	1,072
1992	39	0	39	371	679	510	162	205	204	572	884	753
1993	57	0	57	810	1,213	1,116	246	100	272	1,113	1,313	1,445
1994	0	0	0	1,941	1,513	2,333	194	307	273	2,135	1,820	2,606
1995	0	110	26	1,418	3,783	2,287	242	838	434	1,660	4,731	2,747
1996	0	0	0	110	645	255	168	105	192	278	750	447
1997	38	0	38	1,662	2,816	2,334	266	395	356	1,966	3,211	2,728
1998	217	0	217	431	208	496	234	52	250	882	260	963
5 Year Average												
1993-1997	19	22	24	1,188	1,994	1,665	223	349	305	1,430	2,365	1,995

a Harvest reported in numbers of fish sold in the round. Does not include estimates of illegal sales in 1987 of 2,136 chinook salmon.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 6 sampling program that estimated average roe weight per female by period.

Appendix C.9. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistrict 4-A, Upper Yukon Area, 1974 - 1998.

Year	334-41					334-44					334-45				
	Roe Expansion				Estimated Harvest ^f	Roe Expansion				Estimated Harvest ^f	Roe Expansion				Estimated Harvest ^f
	Number ^a	Roe ^b	Males ^c	Females ^d		Number ^a	Roe ^b	Males ^c	Females ^d		Number ^a	Roe ^b	Males ^c	Females ^d	
1974	g	0	0	0	g	-	-	-	-	-	-	-	-	-	-
1975	g	0	0	0	g	-	-	-	-	-	-	-	-	-	-
1976	g	0	0	0	g	-	-	-	-	-	-	-	-	-	-
1977	g	0	0	0	g	-	-	-	-	-	-	-	-	-	-
1978	g	16,920	0	16,920	g	-	-	-	-	-	-	-	-	-	-
1979	g	35,117	0	35,117	g	-	-	-	-	-	-	-	-	-	-
1980	g	119,957	0	119,957	g	-	-	-	-	-	-	-	-	-	-
1981	g	160,757	123,266 ^h	160,757	g	-	-	-	-	-	-	-	-	-	-
1982	1,032	137,611	95,788	137,611	234,431	-	-	-	-	-	-	-	-	-	-
1983	3,407	130,013	90,740	130,013	224,160	-	-	-	-	-	-	-	-	-	-
1984	51	148,519	98,962	148,519	247,532	-	-	-	-	-	-	-	-	-	-
1985	5,130	222,149	157,062	222,149	384,341	-	-	-	-	-	-	-	-	-	-
1986	0	236,856	172,222	236,856	409,078	-	-	-	-	-	-	-	-	-	-
1987	29,314	110,977	51,379	110,977	191,670	-	-	-	-	-	-	-	-	-	-
1988	19,070	230,276	167,594	256,718 ^j	443,382	-	-	-	-	-	-	-	-	-	-
1989	14,397	270,039	170,322	301,383 ^k	486,102	-	-	-	-	-	-	-	-	-	-
1990 ^m	-	-	-	-	-	0	27,628	24,484	31,409	55,893	427	28,181	24,153	32,166	56,746
1991	-	-	-	-	-	88	39,281	37,164	47,574	84,826	79	43,087	42,445	53,401	95,925
1992	-	-	-	-	-	0	20,444	13,192	22,383	35,575	0	35,312	26,463	40,142	66,605
1993	-	-	-	-	-	0	6,234	4,308	7,334	11,642	0	6,081	4,246	7,230	11,476
1994 ⁿ	-	-	-	-	-	0	18,095	12,937	22,606	35,543	0	15,091	11,031	19,276	30,307
1995	-	-	-	-	-	0	37,595	37,575	46,084	83,659	0	49,577	49,149	56,667	105,816
1996	-	-	-	-	-	0	31,186	26,210	34,592	60,802	0	40,692	30,785	45,483	76,268
1997	-	-	-	-	-	0	14,188	10,905	15,118	26,023	0	526	342	570	912
1998	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0
5 Year Average															
1993-1997															
						0	21,460	18,387	25,147	43,534	0	22,393	19,111	25,845	44,956

- Continued -

Year	334-46					Subtotal 334-41, 44, 45 and 46					334-47 (Anvik River)				Total (Subdistrict 4-A and Anvik)				
	Roe Expansion				Estimated Harvest ^f	Roe Expansion				Estimated Harvest ^f	Roe Expansion			Estimated Harvest ^f	Roe Expansion				Estimated Harvest ^f
	Number ^a	Roe ^b	Males ^c	Females ^d		Number ^a	Roe ^b	Males ^c	Females ^d		Number ^a	Roe ^b	Females ^d		Number ^a	Roe ^b	Males ^c	Females ^d	
1974	-	-	-	-	-	0	0	0	0	-	-	-	-	-	g	0	0	0	g
1975	-	-	-	-	-	0	0	0	0	-	-	-	-	-	g	0	0	0	g
1976	-	-	-	-	-	0	0	0	0	-	-	-	-	-	g	0	0	0	g
1977	-	-	-	-	-	0	0	0	0	-	-	-	-	-	g	0	0	0	g
1978	-	-	-	-	-	0	16,920	0	16,920	-	-	-	-	-	g	16,920	0	16,920	g
1979	-	-	-	-	-	0	35,117	0	35,117	-	-	-	-	-	g	35,117	0	35,117	g
1980	-	-	-	-	-	0	119,957	0	119,957	-	-	-	-	-	g	119,957	0	119,957	g
1981	-	-	-	-	-	0	180,757	123,266	180,757	-	-	-	-	-	g	180,757	123,266 ^h	180,757	g
1982	-	-	-	-	-	1,032	137,611	95,768	137,611	234,431	-	-	-	-	1,032	137,611	95,768	137,611	234,431
1983	-	-	-	-	-	3,407	130,013	90,740	130,013	224,160	-	-	-	-	3,407	130,013	90,740	130,013	224,160
1984	-	-	-	-	-	51	148,519	98,982	148,519	247,532	-	-	-	-	51	148,519	98,982	148,519	247,532
1985	-	-	-	-	-	5,130	222,149	157,082	222,149	384,341	-	-	-	-	5,130	222,149	157,082	222,149	384,341
1986	-	-	-	-	-	0	236,856	172,222	236,856	409,078	-	-	-	-	0	236,856	172,222	236,856	409,078
1987	-	-	-	-	-	29,314	110,977	51,379	110,977	191,670	-	-	-	-	29,314	110,977	51,379	110,977	191,670
1988	-	-	-	-	-	19,070	230,276	167,594	256,718	443,382	-	-	-	-	19,070	230,276	167,594	256,718 ⁱ	443,382
1989	-	-	-	-	-	14,397	270,039	170,322	301,383	486,102	-	-	-	-	14,397	270,039	170,322	301,383 ^h	486,102
1990 ^m	10,750	39,732	29,490	44,742	84,982	11,177	95,541	78,127	108,317	197,821	-	-	-	-	11,177	95,541	78,127	108,317	197,821
1991	5,122	45,863	47,563	58,819	109,504	5,289	128,231	127,172	157,794	290,255	-	-	-	-	5,289	128,231	127,172	157,794	290,255
1992	0	43,945	32,502	49,469	81,991	0	99,701	72,158	112,013	184,171	-	-	-	-	0	99,701	72,158	112,013	184,171
1993	0	8,170	5,579	9,499	15,078	0	20,485	14,133	24,063	38,196	-	-	-	-	0	20,485	14,133	24,063	38,196
1994 ⁿ	0	29,815	26,825	37,119	65,944	0	82,801	52,794	79,000	131,794	0	19,532	22,574	22,574	0	82,333	52,794	101,574	154,368
1995	0	102,080	105,663	124,550	230,213	0	189,252	192,387	227,301	419,688	0	48,477	54,744	54,744	0	237,729	192,387	282,045	474,432
1996	0	109,172	98,926	120,942	219,868	0	181,050	155,921	201,017	356,938	0	76,318	84,663	84,663	0	257,368	155,921	285,680	441,601
1997	0	41,567	29,207	44,247	73,454	0	58,301	40,454	59,935	100,389	0	13,067	13,548	13,548	0	69,368	40,454	73,483	113,937
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Year Average																			
1993-1997	0	58,125	53,840	67,271	120,911	0	101,978	91,138	118,263	209,401	-	-	-	-	0	133,457	91,138	153,369	244,507

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated number of unsold males that were caught, and not sold while harvesting the females that produced the roe sold. Prior to 1981, it was assumed that all males were sold in the round. Since 1981, all fish sold in the round are assumed to be males. For the years 1981 through 1985, the estimated percentage of males in the harvest was based on percentage of males observed in the department Slink Creek test fish wheel catches (1981 - .434; 1982 - .413; 1983-.420; 1984-.400; and 1985 - .422). For the years 1986 through 1988, the estimated number of males in the harvest was based on the average percentage of males observed in the Slink Creek test fishery for the years 1981 through 1985 (average of .421). For the year 1989, the estimated percentage of males in the harvest was .38. Since 1990, the estimated number of unsold males that produce the roe sold is based on a District 4 sampling program that estimated average percent males in the harvest by statistical area, by period and gear type.

d The estimated number of females to produce the roe sold. Unless otherwise noted, prior to 1991, the roe expansion assumes 1.0 pound of roe per female. Since 1991, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.

f Estimated harvest is the number of fish sold in the round plus the estimated number of females and the estimated number of unsold males harvested to produce the roe sold.

g Information not available.

h Assumes no males were sold in the round.

j Roe expansion assumes .887 pound of roe per female.

k Roe expansion assumes .896 pound of roe per female.

m In 1990, Subdistrict 4-A (Statistical Area 334-41) was subdivided into Statistical Areas 334-44, 334-45 and 334-46.

n In 1994, Statistical Area 334-47 was included in Subdistrict 4-A and it represents the Anvik River Management Area.

Appendix C.10. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistricts 4-B and 4-C, Upper Yukon Area, 1974-1998.

Year	334-42				334-43				Total				
	Number ^a	Roe Expansion		Estimated Harvest ^d	Number ^a	Roe Expansion		Estimated Harvest ^d	Number ^a	Roe Expansion			Estimated Harvest ^d
		Roe ^b	Females ^c			Roe ^b	Females ^c			Roe ^b	Females ^c	Males ^f	
1974	g	0	0	g	-	-	-	-	g	0	0	0	g
1975	g	0	0	g	-	-	-	-	g	0	0	0	g
1976	g	0	0	g	-	-	-	-	g	0	0	0	g
1977	g	0	0	g	-	-	-	-	g	0	0	0	g
1978	g	0	0	g	-	-	-	-	g	0	0	0	g
1979 ^h	g	200	200	g	g	0	0	g	g	200	200	g	g
1980	g	14,385	14,385	g	g	1,482	1,482	g	g	15,867	15,867	g	g
1981	g	23,677	23,677	g	g	2,598	2,598	g	g	26,275	26,275	g	g
1982	1,059	12,550	12,550	13,609	1,556	1,120	1,120	2,676	2,615	13,670	13,670	7,003	23,288
1983	3,265	17,549	17,549	20,814	0	563	563	563	3,265	18,112	18,112	9,851	31,228
1984	659	15,184	15,184	15,843	299	3,139	3,139	3,438	958	18,323	18,323	11,257	30,538
1985	1,785	19,306	19,306	21,091	5,092	5,630	5,630	10,722	6,877	24,936	24,936	11,329	43,142
1986	241	29,169	29,169	29,410	59	3,520	3,520	3,579	300	32,689	32,689	23,468	56,457
1987	593	9,956	9,956	10,549	84	541	541	625	677	10,497	10,497	6,956	18,130
1988	4,592	21,766	24,265 ^j	26,358	389	2,484	2,769 ^j	3,158	4,981	24,250	27,034 ^j	14,677	46,692
1989	2,940	9,915	11,066 ^k	12,855	1,217	3,351	3,740 ^k	4,957	4,157	13,266	14,806 ^k	5,179	24,142
1990	1,091	6,600	7,799	8,890	96	3,582	4,434	4,530	1,187	10,182	12,233	11,509	24,929
1991	1,092	8,282	8,996	10,088	0	719	781	781	1,092	9,001	9,777	8,520	19,389
1992	1,363	9,010	9,616	10,979	1,296	2,098	2,902	4,198	2,659	11,108	12,518	12,048	27,225
1993	0	1,851	2,134	4,445	27	111	140	316	27	1,962	2,274	2,460	4,761
1994	2,844	6,455	g	14,803	767	929	g	2,436	3,611	7,384	g	g	17,239
1995	8,873	39,699	g	73,570	0	3,646	g	6,585	8,873	43,345	g	g	80,155
1996	0	36,927	39,156	67,012	0	895	939	1,627	0	37,822	40,095	28,544	68,639
1997	1,942	4,786	5,199	10,484	120	77	81	250	2,062	4,863	5,280	5,454	10,734
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Year Average													
1993-1997	2,732	17,944	9,298	34,063	183	1,132	232	2,243	2,915	19,075	9,530	7,292	36,306

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon sold.

c The estimated number of females to produce the roe sold. Unless otherwise noted, prior to 1991, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of female that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.

d The total estimated harvest is the fish sold in the round plus estimated number of females harvested to produce roe sold plus the estimated number of males caught but not sold.

f Estimated number of males caught but not sold. Total males caught but not sold calculated the same as for District 4-A (using sex ratio and sales in the round assumed to be male chum salmon).

g Information not available by statistical area.

h In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.

j Roe expansion assumes .897 pound of roe per female.

k Roe expansion assumes .896 pound of roe per female.

Appendix C.11. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistricts 5-A, 5-B and 5-C, Upper Yukon Area, 1974 - 1998.

Year	334-51			334-52			334-53			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	d	0	d	d	0	d	-	-	-	6,831	0	6,831
1975	d	0	d	d	0	d	-	-	-	12,997	0	12,997
1976	d	0	d	d	0	d	-	-	-	774	0	774
1977	d	0	d	d	0	d	-	-	-	1,274	0	1,274
1978	d	605	d	d	0	d	-	-	-	4,892	605	5,497
1979	d	1,009	d	d	0	d	-	-	-	8,608	1,009	9,617
1980	d	0	d	d	0	d	-	-	-	458	0	456
1981	d	0	d	d	49	d	d	0	d	1,236	49	1,285
1982	d	21	d	d	0	d	d	0	d	213	21	234
1983	0	242	242	37	269	306	5	1,345	1,350	42	1,856	1,898
1984	50	0	50	578	47	625	12	0	12	640	47	687
1985	0	0	0	700	0	700	0	0	0	700	0	700
1986	0	0	0	682	0	682	8	0	8	690	0	690
1987	0	0	0	362	44	406	0	0	0	362	44	406
1988	0	0	0	717	337	1,054	5	26	31	722	363	1,085
1989	0	0	0	112	204	316	1	169	170	113	373	486
1990	0	0	0	0	225	250	5	350	394	5	575	644
1991	0	0	0	0	28	31	4	0	4	4	28	35
1992	0	0	0	30	295	358	72	0	72	102	295	430
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	133	212	368	96	0	96	229	212	464
1995	0	0	0	0	188	209	107	0	107	107	188	316
1996	0	0	0	0	0	0	0	188	209	0	188	209
1997	0	0	0	0	0	0	125	0	125	125	0	125
1998	0	0	0	37	13	51	59	0	59	96	13	110
5 Year Average 1993-1997	0	0	0	27	80	115	66	38	107	92	118	223

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook roe. Since 1990, efforts were made to separate chinook roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produced the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d Information not available.

f In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54). In 1990, Subdistrict 5-D (Statistical Area 333-54) was further subdivided into Statistical Areas 334-54 and 334-55.

Appendix C.12. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistrict 5-D, Upper Yukon Area, 1974 - 1998.

Year	334-54			334-55			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-
1980	f	-	f	-	-	-	f	-	f
1981	f	0	f	-	-	-	f	0	f
1982	f	0	f	-	-	-	f	0	f
1983	0	0	0	-	-	-	0	0	0
1984	5	0	5	-	-	-	5	0	5
1985	0	0	0	-	-	-	0	0	0
1986	0	0	0	-	-	-	0	0	0
1987	0	0	0	-	-	-	0	0	0
1988	0	0	0	-	-	-	0	0	0
1989	41	0	41	-	-	-	41	0	41
1990	6	19	27	0	0	0	6	19	27
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0
1996	0	114	127	0	0	0	0	114	127
1997	12	0	12	0	0	0	12	0	12
1998	0	0	0	0	0	0	0	0	0
5 Year Average									
1993-1998	2	23	28	0	0	0	2	23	28

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).

f Information not available.

g In 1990, Subdistrict 5-D (Statistical Area 334-54) was subdivided into two statistical areas, (Statistical Areas 334-54 and 334-55).

Appendix C.13. Commercial summer chum salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974 - 1998.

Year	334-61			334-62			334-63			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	d	0	d	d	0	d	d	0	d	13,318	0	13,318
1975	d	0	d	d	0	d	d	0	d	14,782	0	14,782
1976	d	0	d	d	0	d	d	0	d	6,617	0	6,617
1977	d	0	d	d	0	d	d	0	d	4,317	0	4,317
1978	d	1,468	d	d	6,116	d	d	652	d	34,814	8,236	43,050
1979	d	d	d	d	d	d	d	d	d	18,491	3,891	22,382
1980	d	0	d	d	2,272	d	d	1,010	d	35,855	3,282	39,137
1981	d	0	d	d	925	d	d	1,062	d	32,477	1,987	34,464
1982	d	0	d	d	1,027	d	d	490	d	21,597	1,517	23,114
1983	1,923	0	1,923	21,646	18	21,664	740	0	740	24,309	18	24,327
1984	3,769	0	3,769	42,231	152	42,383	10,249	183	10,432	56,249	335	56,584
1985	809	0	809	51,132	142	51,274	14,972	1,398	16,370	66,913	1,540	68,453
1986	4,697	0	4,697	31,647	1,711	33,358	14,139	435	14,574	50,483	2,146	52,629
1987	2,167	0	2,167	6,882	349	7,231	1,561	101	1,662	10,610	450	11,060
1988	7,978	71	8,049	24,911	1,165	26,076	7,240	410	7,650	40,129	1,646	41,775
1989	16,483	61	16,544	18,960	4,277	23,237	6,672	533	7,205	42,115	4,871	46,986
1990	2,862	12	2,877	6,028	1,637	8,011	2,237 ^f	1,410	3,945	11,127 ^f	3,059	14,833
1991	4,742	0	4,742	10,100	2,653	13,304	3,355	2,063	5,846	18,197	4,716	23,892
1992	1,327	0	1,327	3,446	1,684	5,409	256	208	492	5,029	1,892	7,228
1993	1,156	0	1,156	1,603	315	2,009	282	200	540	3,041	515	3,705
1994	5,114	0	5,114	13,805	5,643	21,182	2,289	2,185	5,138	21,208	7,828	31,434
1995	5,894	0	5,894	16,020	6,731	25,112	2,797	2,744	6,422	24,711	9,475	37,428
1996	3,194	0	3,194	12,632	13,139	30,206	6,534	5,193	13,490	22,360	18,332	46,890
1997	3,162	0	3,162	9,168	6,525	16,709	2,556	2,511	5,416	14,886	9,036	25,287
1998	56	0	56	202	109	337	139	31	177	397	140	570
5 Year Average												
1993-1997	3,704	0	3,704	10,646	6,471	19,044	2,892	2,567	6,201	17,241	9,037	28,949

^a Harvest reported in numbers of fish sold in the round.

^b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

^c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 6 sampling program that estimated average roe weight per female by period.

^d Information not available.

^f Does not include 1,233 female summer chum salmon sold with roe extracted and roe sold separately. Females are accounted for in the roe expansion.

Appendix C.14. Commercial fall chum salmon sales and estimated harvest by statistical area, District 4, Upper Yukon Area, 1974 - 1998.

Year	334-41			334-42			334-43			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	0	0	0	9,213	0	9,213	-	-	-	9,213	0	9,213
1975	d	0	d	d	0	d	-	-	-	13,666	0	13,666
1976	462	0	462	1,280	0	1,280	-	-	-	1,742	0	1,742
1977 ^f	d	0	d	d	0	d	-	-	-	13,980	0	13,980
1978	-	-	-	d	1,721	d	-	-	-	10,988	1,721	12,709
1979 ^g	-	-	-	d	3,199	d	d	0	d	48,899	3,199	52,098
1980	-	-	-	d	1,789	d	d	2,558	d	27,978	4,347	32,325
1981	-	-	-	d	1,311	d	d	0	d	12,082	1,311	13,393
1982	-	-	-	958	20	978	2,936	147	3,083	3,894	167	4,061
1983	-	-	-	3,681	1,591	5,272	801	372	1,173	4,482	1,963	6,445
1984	-	-	-	2,961	1,222	4,183	4,664	993	5,657	7,625	2,215	9,840
1985	-	-	-	14,468	891	15,359	9,984	1,634	11,618	24,452	2,525	26,977
1986	-	-	-	2,045	0	2,045	0	0	0	2,045	0	2,045
1987	-	-	-	0	0	0	0	0	0	0	0	0
1988	-	-	-	10,157	703	10,860	5,505	718	6,223	15,662	1,421	17,083
1989	-	-	-	9,819	2,023	11,842	1,957	1,384	3,341	11,776	3,407	15,183
1990	-	-	-	3,406	1,680	5,676	1,583	671	2,490	4,989	2,351	8,166
1991	-	-	-	2,998	490	3,718	739	1,126	2,373	3,737	1,616	6,091
1992	-	-	-	0	0	0	0	0	0	0	0	0
1993	-	-	-	0	0	0	0	0	0	0	0	0
1994	-	-	-	0	0	0	0	0	0	0	0	0
1995	-	-	-	2,924	225	3,249	0	3,901	5,482	2,924	4,126	8,731
1996	-	-	-	2,918	0	2,918	0	0	0	2,918	0	2,918
1997	-	-	-	463	0	463	1,995	0	1,995	2,458	0	2,458
1998	-	-	-	0	0	0	0	0	0	0	0	0
5 Year Average 1993-1997	-	-	-	1,261	45	1,326	399	780	1,495	1,660	825	2,821

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by period, by statistical area and gear type.

d Information not available.

f In 1977, was the last year Subdistrict 4-A (Statistical Area 334-41), by regulation, was allowed a late season.

g In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.

Appendix C.15. Commercial fall chum salmon sales and estimated harvest by statistical area, Subdistricts 5-A, 5-B and 5-C, Upper Yukon Area, 1974-1998.

Year	334-51			334-52			334-53			Unapportioned	Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number	Roe ^b	Estimated Harvest ^c	Number ^{a,g}	Number ^a	Roe ^b	Estimated Harvest ^c
1974	23,551 _d	0	23,551 _d	0 _d	0	0 _d	-	-	-	0	23,551	0	23,551
1975		0			0		-	-	-	27,212	27,212	0	27,212
1976	5,319 _d	0	5,319 _d	68 _d	0	68 _d	-	-	-	0	5,387	0	5,387
1977		0			0		-	-	-	25,730	25,730	0	25,730
1978		3,946 _d			1,274 _d		-	-	-	21,016	21,016	5,220	26,236
1979		8,097 _d			0 _d		-	-	-	47,459	47,459	8,097	55,556
1980		605 _d			0 _d		-	-	-	41,771	41,771	605	42,376
1981		178 _d			6,760 _d			17 _d		86,620	86,620	6,955	93,575
1982		0 _d			23 _d			19 _d		13,593	13,593	42	13,593
1983	3,143	0	3,143	19,771	0	19,771	17,987	0	17,987	0	40,901	0	40,901
1984	1,415	0	1,415	10,329	0	10,329	9,403	0	9,403	0	21,147	0	21,147
1985	565	0	565	9,263	0	9,263	13,332	0	13,332	0	23,160	0	23,160
1986	1,332	0	1,332	11,907	395	12,302	7,471	0	7,471	0	20,710	395	21,105
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	9,684	0	9,684	4,533	0	4,533	0	14,217	0	14,217
1989	372	60	432	9,937	3,327	13,264	4,987	209	5,196	0	15,296	3,596	18,892
1990	0	0	0	5,169	945	6,243	0	0	0	0	5,169	945	6,243
1991	0	0	0	14,968	3,625	19,727	9,173	0	9,173	0	24,141	3,625	28,900
1992	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	2,513	3,159	1,785	13,091	18,397	4,014	389	4,498	0	5,799	15,993	26,054
1996	0	181	208	5,898	8,317	15,670	1,583	0	1,583	0	7,481	8,498	17,461
1997	0	0	0	1,595	1,194	3,069	0	0	0	0	1,595	1,194	3,069
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
5 Year Average													
1993-1997	0	539	673	1,856	4,520	7,427	1,119	78	1,216	0	2,975	5,137	9,317

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d Information not available by statistical area.

f In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) was subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54) and Subdistrict 5-D (Statistical Area 334-54) was further subdivided into Statistical Areas 334-54 and 334-55.

g includes harvest in Subdistrict 5-D from 1978 through 1982.

Appendix C.16. Commercial fall chum salmon sales and estimated harvest by statistical area, Subdistricts 5-D, Upper Yukon Area, 1974 - 1998.

Year	334-54			334-55			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-
1981 ^d	f	0	f	-	-	-	f	0	f
1982	f	0	f	-	-	-	f	0	f
1983	3,092	0	3,092	-	-	-	3,092	0	3,092
1984	2,913	57	2,970	-	-	-	2,913	57	2,970
1985	2,178	0	2,178	-	-	-	2,178	0	2,178
1986	1,343	0	1,343	-	-	-	1,343	0	1,343
1987	0	0	0	-	-	-	0	0	0
1988	2,772	0	2,772	-	-	-	2,772	0	2,772
1989	2,919	393	3,312	-	-	-	2,919	393	3,312
1990 ^e	1,758	113	1,882	851	0	851	2,609	113	2,733
1991	1,846	0	1,846	1,368	0	1,368	3,214	0	3,214
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	3,630	0	3,630	3,630	0	3,630
1995	0	0	0	3,979	2,823	3,979 ^h	3,979	2,823	3,979
1996	890	0	890	3,507	0	3,507	4,397	0	4,397
1997	40	0	40	811	0	811	851	0	851
1998	0	0	0	0	0	0	0	0	0
5 Year Average									
1993-1997	186	0	186	2,385	565	2,385	2,571	565	2,571

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from fall chum salmon roe.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pounds of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) was subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).

f Information not available.

g In 1990, Subdistrict 5-D (Statistical Area 334-54) was subdivided into two statistical areas, (Statistical Areas 334-54 and 334-55).

h Estimated harvest equals fish sold in round. The roe came from fish sold in the round, therefore, not included in estimated harvest to avoid duplicate counting

Appendix C.17. Commercial fall chum salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974-1998.

Year	334-61			334-62			334-63			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	d	d	d	d	d	d	d	d	d	26,884	0	26,884
1975	d	0	d	d	0	d	d	0	d	18,692	0	18,692
1976	d	0	d	d	0	d	d	0	d	17,948	0	17,948
1977	d	0	d	d	0	d	d	0	d	18,673	0	18,673
1978	4,704 _d	1,826 _d	6,530 _d	8,036 _d	1,680 _d	9,716 _d	519 _d	181 _d	700 _d	13,259	3,687	16,946
1979	d	0	d	d	53	d	d	15	d	34,185	7,170	41,355
1980	d	0	d	d	2,784	d	d	235	d	19,452	68	19,520
1981	d	0	d	d	2,784	d	d	235	d	25,989	3,019	29,008
1982	706	0	706	4,586	596	5,182	1,528	0	1,528	6,820	596	7,416
1983	3,526	0	3,526	23,096	3,009	26,105	7,467	92	7,559	34,089	3,101	37,190
1984	5,617	0	5,617	11,809	0	11,809	3,138	56	3,194	20,564	56	20,620
1985	1,462	0	1,462	34,663	0	34,663	6,227	0	6,227	42,352	0	42,352
1986	176	0	176	1,345	182	1,527	371	0	371	1,892	182	2,074
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	4,500	0	4,500	13,617	1,035	14,652	3,727	771	4,498	21,844	1,806	23,650
1989	14,870	173	15,043	25,650	7,050	32,700	8,570 _f	130	8,700	49,090 _f	7,353	56,443
1990	9,254	0	9,254	28,932	6,617	35,776	4,996 _f	918	5,945	43,182 _f	7,535	50,975
1991	3,278	0	3,278	21,834	12,253	35,904	3,083	1,901	5,266	28,195	14,154	44,448
1992	0	0	0	13,713	1,816	15,852	2,008	990	3,170	15,721	2,806	19,022
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	3,239	4,319	1	37	50	1	3,276	4,369
1995	6,170	0	6,170	60,466	8,164	65,051	1,219	1,396	2,896	67,855	9,560	74,117
1996	663	236	934	8,491	4,906	14,332	1,112	1,031	2,308	10,266	6,173	17,574
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
5 Year Average												
1993-1997	1,367	47	1,421	13,791	3,262	16,740	466	493	1,051	15,624	3,802	19,212

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pounds of roe per female. Since 1990, the estimated number of females that produce the for sold is based on a District 6 sampling program that estimated average roe weight per female by period.

d Information not available.

f Does not include 884 female fall chum salmon sold with roe extracted and roe sold separately. Females are accounted for in the roe expansion.

Appendix C.18. Commercial coho salmon sales and estimated harvest by statistical area, District 4, Upper Yukon Area, 1974 - 1998.

Year	334-41			334-42			334-43			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	0	-	0	0	-	0	-	-	-	0	-	0
1975	0	-	0	0	-	0	-	-	-	0	-	0
1976	0	-	0	0	-	0	-	-	-	0	-	0
1977 ^d	0	-	0	0	-	0	-	-	-	0	-	0
1978	-	-	-	32	-	32	-	-	-	32	-	32
1979 ^f	-	-	-	155	-	155	0	-	0	155	-	155
1980	-	-	-	g	-	g	g	-	g	30	-	30
1981	-	-	-	0	-	0	0	-	0	0	-	0
1982	-	-	-	0	-	0	15	-	15	15	-	15
1983	-	-	-	0	-	0	0	-	0	0	-	0
1984	-	-	-	412	-	412	683	-	683	1,095	-	1,095
1985	-	-	-	153	-	153	785	-	785	938	-	938
1986	-	-	-	0	-	0	0	-	0	0	-	0
1987	-	-	-	0	-	0	0	-	0	0	-	0
1988	-	-	-	2	-	2	0	-	0	2	-	2
1989	-	-	-	0	-	0	3	-	3	3	-	3
1990	-	-	-	0	0	0	0	0	0	0	0	0
1991	-	-	-	11	0	11	3	0	3	14	0	14
1992	-	-	-	0	0	0	0	0	0	0	0	0
1993	-	-	-	0	0	0	0	0	0	0	0	0
1994	-	-	-	0	0	0	0	0	0	0	0	0
1995	-	-	-	0	0	0	0	0	0	0	0	0
1996	-	-	-	161	0	161	0	0	0	161	0	161
1997	-	-	-	19	0	19	795	0	795	814	0	814
1998	-	-	-	0	0	0	0	0	0	0	0	0
5 Year Average												
1993-1997	-	-	-	36	0	36	159	0	159	195	0	195

a Harvest reports in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pounds of roe per female. Since 1990, the estimated number of females that produce the for sold is based on a District 4 sampling program that estimated average roe weight per female by period.

d 1977 was the last year Subdistrict 4-A (Statistical Area 334-41), by regulation, was allowed a late season.

f In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.

g Information not available.

Appendix C.19. Commercial coho salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974 - 1998.

Year	334-61			334-62			334-63			Total		
	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c	Number ^a	Roe ^b	Estimated Harvest ^c
1974	d	-	d	d	-	d	d	-	d	1,479	-	1,479
1975	0	-	0	0	-	0	53	-	53	53	-	53
1976	d	-	d	d	-	d	d	-	d	1,103	-	1,103
1977	252	-	252	766	-	766	266	-	266	1,284	-	1,284
1978	521	-	521	2,450	-	2,450	95	-	95	3,066	-	3,066
1979	465	-	465	2,059	-	2,059	267	-	267	2,791	-	2,791
1980	423	-	423	632	-	632	171	-	171	1,226	-	1,226
1981	535	-	535	1,335	-	1,335	414	-	414	2,284	-	2,284
1982	1,004	-	1,004	6,449	-	6,449	327	-	327	7,780	-	7,780
1983	745	-	745	5,048	-	5,048	375	-	375	6,168	-	6,168
1984	1,608	-	1,608	5,360	-	5,360	720	-	720	7,688	-	7,688
1985	432	-	432	9,628	-	9,628	1,702	-	1,702	11,762	-	11,762
1986	30	-	30	370	-	370	41	-	41	441	-	441
1987	0	-	0	0	-	0	0	-	0	0	-	0
1988	1,240	-	1,240	10,372	-	10,372	2,360	-	2,360	13,972	-	13,972
1989	2,818	-	2,818	10,181	-	10,181	3,085	-	3,085	16,084	-	16,084
1990	3,173	0	3,173	7,096	3,559	9,951	1,280 ^f	483	1,680	11,549	4,042	14,804
1991	0	0	0	4,572	3,737	7,620	1,696	562	2,154	6,268	4,299	9,774
1992	0	0	0	5,731	1,267	6,800	825	413	1,179	6,556	1,680	7,979
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	5,398	4,184	120	190	267	120	5,588	4,451
1995	1,475	0	1,475	4,209	2,072	5,156	142	157	269	5,826	2,229	6,900
1996	182	0	182	3,403	4,571	6,557	218	258	403	3,803	4,829	7,142
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
5 Year Average												
1993-1997	331	0	331	1,522	2,408	3,179	96	121	188	1,950	2,529	3,699

a Harvest reports in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 6 sampling program that estimated average roe weight per female by period.

d Information not available.

f Does not include 438 female coho salmon sold with roe extracted and roe sold separately. Females are accounted for in the roe expansion calculation.

Appendix C.20. Summary of test fish wheel projects conducted in the Upper Yukon Area, 1998.

TEST FISH WHEEL PROJECTS	CONTRACTOR/ Operator	River Mile ^a	Operational Dates	Total Days of Operation	Estimated Total Salmon Captured ^b				Historical Data / Comments	
					Chinook	Summer Chum	Fall Chum	Coho		
YUKON RIVER										
Tanana Village Test Fish Wheels	BSFA/									
North Bank	L. Erhart	695	Jul-31 to Sep-15	47	-	-	1,188	59	Sixth year of project.	
South Bank	B. Filris	690	Aug-15 to Sep-29	46	-	-	8,376	1,171	Seventh year of project. Also operated as Toklat CW recovery wheel.	
Yukon River (Rapids) Tag Deployment Fish Wheels	USFWS/									
North Bank	S. Zuray	731	Jul-21 to Sep-19	61	-	-	-	-	Third year of the project.	
South Bank	S. Zuray	731	Jul-21 to Sep-19	61	-	-	-	-	Third year of the project.	
Combined							8,560 ^c	0 ^c		
Yukon River (Rampart) Tag Recovery Fish Wheels	USFWS/									
North Bank	P. Evans	763	Jul-21 to Sep-23	65	-	-	12,252	0	Third year of the project.	
South Bank	P. Evans	763	Jul-21 to Sep-23	65	-	-	3,671	0	Third year of the project.	
TANANA RIVER										
Lower Tanana Tag Deployment Fish Wheel	ADF&G/									
North Bank	C. Boulding	793	Aug-17 to Oct-5	50	-	-	1,840	817	Fourth year of operation as the fall chum salmon tag deployment fish wheel (1995-1998).	
Nenana Test and Recovery Fish Wheels	ADF&G/									
North Bank (Test / Recovery)	T. Duyck	859	Jul-1 to Oct-6	98	1,151	1,619 ^d	1,326 ^e	980	Eleventh year of project. Also operated as a fall chum salmon tag recovery fish wheel (1995-1998).	
South Bank (Recovery)	BSFA/ T. Duyck	860	Aug-16 to Oct-6	52	-	-	1,977	1,062	Fourth year of operation as the fall chum salmon tag recovery fish wheel (1995-1998).	
TOKLAT RIVER										
Toklat River Coded Wire Recovery Fish Wheels	ADF&G/									
North Bank	ADF&G Crew	846	Aug-19 to Oct-2	45	-	-	329	91	Third year of project (1997-1998).	
South Bank	ADF&G Crew	846	Aug-24 to Oct-2	40	-	-	526	62	Third year of project (1996-1998).	

^a Estimated river miles from the mouth of the Yukon River.

^b Unless otherwise noted, fish wheel catch are adjusted to estimate total catch (i.e., less than or greater than 24 hour catches adjusted to reflect a 24 hour catch).

^c Actual fall chum and coho salmon catch totals (not adjusted for hours not operated).

^d Estimated summer chum salmon totals include all chum salmon caught prior to August 16.

^f Estimated fall chum salmon totals include all chum salmon caught after August 15.

APPENDIX D

YUKON RIVER SALMON SUBSISTENCE AND PERSONAL USE

Appendix D.1. Estimated chinook salmon subsistence harvest in numbers of fish by fishing district and by community of residence, Yukon Area, 1987-1998. a

Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Hooper Bay	2,763	1,099 b	14 b			503	230	157	1,500	1,127	613	13	539 c	725
Scammon Bay	838	489 b	2 b			948	1,199	668	585	1,238	526	378	480 c	843
Coastal District Subtotal	3,621	1,588	16			1,451	1,429	825	2,085	2,365	1,139	391	1,018	1,569
Sheldon Point	1,173	302	165	756	445	388	561	806	459	450	970	527	411	609
Alakanuk	1,180	738	820	871	1,044	823	2,562	1,045	1,191	852	2,058	1,930	819	1,504
Emmonak	2,518	1,788	1,598	1,873	1,311	2,336	4,372	2,384	1,711	702	3,080	2,396	1,781	2,450
Kotlik	2,407	1,112	1,982	3,118	3,125	1,794	2,913	2,505	2,599	1,832	1,442	2,389	2,226	2,258
Retained from commercial							15	114						26
District 1 Subtotal	7,278	3,938	4,585	6,819	5,925	5,141	10,423	6,654	5,960	3,646	7,550	7,242	5,238	6,847
Mountain Village	2,252	740	2,001	1,792	1,171	1,249	3,217	1,511	1,542	1,315	2,081	2,533	1,391	1,933
Pilakas Point	380	367	592	391	652	851	1,001	489	559	782	793	817	571	717
St. Marys	2,077	1,011	1,592	2,085	1,836	1,753	2,042	2,722	2,031	1,766	2,592	2,679	1,655	2,231
Pilot Station	2,593	674	1,498	3,786	2,681	1,818	2,881	1,977	1,614	1,811	2,373	1,715	2,091	2,087
Marshall	2,564	1,031	1,464	1,492	1,277	1,403	2,592	2,277	3,291	2,128	1,511	1,711	1,333	2,359
Retained from commercial							3	78						16
District 2 Subtotal	9,886	3,823	7,147	9,546	7,817	7,074	11,518	9,034	9,037	7,780	9,350	9,455	7,041	9,343
Russian Mission	2,036	1,850	2,367	1,894	1,349	1,282	3,273	1,793	2,450	2,709	1,459	1,314	1,708	2,337
Holy Cross	2,825	2,593	2,379	2,337	1,649	3,491	3,191	4,040	2,808	3,953	3,472	2,848	2,490	3,493
Shageluk	47	104	32	62	189	218	128	291	161	121	1,380	552	121	416
Retained from commercial							10	25						7
District 3 Subtotal	4,708	4,547	4,778	4,093	3,187	4,991	8,602	6,149	5,419	6,783	6,311	4,514	4,319	6,253
Lower Yukon River Total	21,852	12,308	16,490	20,258	16,729	17,206	28,541	21,837	20,416	18,209	23,211	21,211	16,598	22,443
Anvik	428	211	418	481	619	389	663	424	450	768	951	1,025	424	651
Grayling	1,322	1,571	1,082	144	874	1,074	1,046	1,843	1,340	1,036	2,391	2,177	949	1,531
Kaltag	1,117	1,168	1,306	2,244	1,868	1,084	1,280	1,653	1,890	994	1,038	1,870	1,534	1,367
Nulato	1,573	1,986	2,079	2,788	2,500	1,596	1,660	1,735	1,533	1,461	1,576	4,147	2,190	1,593
Koyukuk	609	711	1,003	876	885	510	853	589	148	402	851	800	797	568
Galena	1,270	1,982	1,374	3,134	2,574	1,870	1,732	1,834	1,338	2,770	2,350	1,668	2,187	2,004
Ruby/Kokrines	927	1,402	1,015	811	971	498	3,283	1,539	1,435	557	2,260	3,891	940	1,811
Retained from commercial							978	203						238
District 4 Yukon River Subtotal (Excluding the Koyukuk River)	7,246	9,031	8,278	10,478	10,289	7,021	11,454	9,820	8,130	7,988	11,415	15,578	9,019	9,761
Huslia	182	89	177	198	198	751	232	239	932	67	57	23	283	305
Hughes	177	29	181	90	148	29	88	107 d	77	54	34	91	95	72
Allakaket	309 f	339	438 f	284	448	395	135	338 d	321	82	423	85	388 g	260
Alatna	- f	27	- f	72	5	42	4	26 d	10	2	38	4	37 g	18
Battles		0	0	0	16	53	1	0	4	0	39	20	17	9
Koyukuk River Subtotal	668	484	796	644	811	1,270	480	710	1,344	205	591	223	797	662
District 4 Subtotal	7,914	9,515	9,074	11,122	11,100	8,291	11,914	10,530	9,474	8,193	12,006	15,801	9,817	10,423

-Continued-

Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Tanana	4,021	3,537	3,008	2,284	2,483	2,477	3,362	2,999	2,398	2,741	3,598	5,212	2,758	3,019
Rampart	2,815	3,145	3,177	1,481	988	2,802	1,956	1,354	1,461	1,751	2,203	885	2,319	1,745
Fairbanks (permits) ^h	813	0	200	420	982	1,394	1,514	1,920	1,447	1,188	955	1,231	599	1,400
Stevens Village	2,078	2,845	3,101	1,295	2,035	1,887	1,754	2,814	2,674	881	2,070	1,232	2,233	1,999
Birch Creek		0 ^b	0	0	196	44	0	119	93	0	373	48	48	117
Beaver	486	840	1,894	721	713	1,584	1,557	850	1,021	886	1,859	470	1,126	1,235
Fort Yukon	3,950	2,245	4,898	4,051	5,585	4,122	8,361	4,727	3,132	4,957	3,145	1,771	4,180	4,464
Circle (permits) ^j	1,614 ^k	1,773	1,785 ^k	1,767	1,720	1,585	745	1,377	1,145	1,781	1,091	685	1,711 ^g	1,228
Central (permits) ^j	- ^k	281	- ^k	184	151	167	210	240	171	131	146	170	191 ^g	180
Eagle (permits) ^j	1,988	2,333	2,385	1,742	1,193	1,040	753	1,234	1,886	1,092	1,534	2,473	1,739	1,300
Other (permits) ^j ^m				815	374	571	437	602	1,004	377	763	448	520 ⁿ	837
Retained from commercial							746	868						323
District 5 Yukon River Subtotal (Excluding Chandalar/Black Rivers)	17,543	17,079	20,248	14,560	16,420	17,653	19,395	19,104	18,432	15,563	17,735	14,823	17,423	17,646
Venetie	13	121	88	29	9	35	2,718	524	434	134	314	188	56	824
Chalkyitsik	0	0	0	0	0	3	0	0	0	30	0	11	1	6
Chandalar/Black Rivers Subtotal	13	121	88	29	9	38	2,718	524	434	164	314	179	57	830
District 5 Subtotal	17,556	17,200	20,336	14,589	16,429	17,691	22,111	19,628	18,866	16,727	18,049	14,802	17,225	18,090
Manley ^p	40	572	992	1,169	401	551	238	480	335	134	242	209	737	286
Minto ^p	374	466	368	100	134	142	468	318	535	523	1,208	275	242	610
Nenana ^p	3,151	3,846	1,188	1,265	1,589	1,267	693	759	807	423	1,082	1,187	1,833	713
Fairbanks (permits) ^j ^r	531	0	0	84	378	402	273	775	285	97	178	230	173	321
Other ^p ^s		0	0	0	3	76	0	40	17	0	4	18	16	12
Retained from commercial							1,037	198						247
District 6 Tanana River Subtotal	4,096	4,884	2,546	2,618	2,515	2,438	2,709	2,568	1,779	1,177	2,712	1,919	3,000	2,189
Upper Yukon River Total	29,586	31,599	31,958	28,329	30,044	28,420	36,734	32,726	28,119	25,097	32,767	32,522	30,042	30,702
Alaska, Yukon River Total ^t	51,418	43,907	48,446	48,587	48,773	45,826	65,275	54,583	48,535	43,308	55,978	53,733	46,640	53,145
Alaska, Yukon Area Total	55,039	45,485	48,462	48,587	48,773	47,077	68,704	55,388	50,820	45,671	57,117	54,124	47,659	54,713

^a Historic estimated subsistence harvests are available in each years respective Yukon Area Annual Management Report (1961 to 1996). Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households. Numbers include test fish catches given away. Blanks indicate harvest information was not collected.

^b The village was not surveyed, harvest estimates were calculated from calendar and post card replies.

^c Average harvest includes 1988, 1989 and 1992.

^d Due to floods in 1994, Hughes, Allakaket, and Alaina were not surveyed. The 1994 chinook salmon harvest is estimated based on five-year-average 1989-1993.

^f Alaina and Allakaket harvests combined.

^g Average harvest includes 1988 and 1990-1992.

^h Harvests by Fairbanks subsistence permit holders that fished in District 5 near the Yukon River bridge crossing.

^j Salmon catches expanded for permits not returned and household interviews (1981-1989). Beginning in 1990, reported harvest is from returned permits only.

^k Circle and Central harvests are combined.

^m Other permit holders that fished in District 5 but did not reside in the villages listed.

ⁿ Average harvest includes 1990-1992.

^p Permits required beginning in 1988 for Subdistricts 6-A and 6-B. In 1988 and 1989, permit and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.

^r Harvests by Fairbanks subsistence permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tanana River upstream of the Wood River.

^s Other permit holders that fished in District 6 but did not reside in the villages listed.

^t Does not include Coastal District.

Appendix D.2. Estimated summer chum salmon subsistence harvest in numbers of fish by fishing district and community of residence, Yukon Area, 1987-1998. a

Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Hooper Bay	23,468	23,059 b	2,293 b			12,900	16,106	10,556	13,374	15,870	12,310	261	23,264 c	13,234
Scammon Bay	6,200	8,171 b	48 b			3,795	4,692	4,347	3,986	6,365	3,401	1,101	7,186 c	4,205
Coastal District Subtotal	29,668	31,230	2,341			16,695	20,798	14,903	17,360	22,235	15,711	1,362	30,449	17,465
Sheldon Point	2,460	2,589	4,314	1,458	2,226	1,415	2,362	1,941	2,979	2,634	2,603	1,872	2,609	2,174
Alakanuk	9,913	6,992	12,108	7,265	8,058	9,851	8,935	5,947	10,538	6,171	7,443	5,643	8,867	8,843
Emmonak	11,177	10,528	22,985	15,215	8,401	12,296	15,568	13,060	11,696	6,097	12,399	9,558	13,661	13,155
Kotlik	7,210	8,825	13,437	13,061	9,105	9,677	7,121	11,197	9,777	12,387	4,803	9,815	10,328	9,418
Retained From Commercial							299	12,608						
District 1 Subtotal	30,760	28,934	52,844	36,999	27,790	33,239	34,285	44,753	34,990	27,289	27,248	26,888	35,466	33,590
Mountain Village	12,456	9,248	15,869	9,950	4,743	7,864	10,605	3,938	10,554	9,285	11,310	9,596	10,453	8,215
Pitkas Point	1,184	2,384	4,176	1,438	1,452	759	1,481	1,103	1,665	1,619	747	1,302	2,127	1,252
St. Marys	11,218	8,117	8,948	8,077	7,832	7,796	5,925	10,128	5,950	6,736	8,874	9,047	8,838	7,450
Pilot Station	4,279	4,242	6,783	6,698	4,634	6,236	5,641	5,450	4,427	6,355	4,532	5,042	5,327	5,439
Marshall	3,997	4,796	3,927	2,290	2,042	2,076	1,745	2,288	4,594	4,431	1,608	1,293	3,410	2,676
Retained From Commercial							120	5,745						
District 2 Subtotal	33,134	28,787	39,703	28,453	20,703	24,731	25,417	28,652	27,190	28,426	26,971	26,280	30,156	25,031
Russian Mission	2,283	2,794	2,229	2,146	837	3,331	1,838	801	3,653	3,554	585	702	2,058	2,406
Holy Cross	1,878	3,036	1,753	857	1,028	1,001	1,517	1,479	948	1,700	487	269	1,710	1,236
Shageluk	8,015	8,779	8,842	6,518	3,680	5,267	4,183	6,212	7,542	6,114	9,244	5,501	7,167	5,801
Retained From Commercial							21	59						
District 3 Subtotal	12,176	14,609	12,824	9,521	5,545	9,599	7,559	8,551	12,143	11,368	10,316	6,472	10,935	9,443
Lower Yukon River Total	76,070	72,330	105,371	74,973	64,038	67,569	67,261	81,956	74,323	67,083	64,535	69,640	76,556	68,064
Anvik	28,887	12,607	410	2,032	876	1,142	1,735	907	9	185	6,306	2,139	8,962	948
Grayling	21,264	22,634	14,570	1,430	8,094	3,605	1,137	1,418	3,385	587	2,446	4,032	13,598	2,386
Kaitag	28,550	3,592	632	6,956	2,287	1,204	1,116	3,683	139	31	73	175	8,403	1,536
Nulato	16,299	10,201	200	502	159	889	15	975	228	1,003	115	3,518	5,472	527
Koyukuk	9,718	284	381	283	2,326	1,130	230	2,039	315	41	739	1,819	2,598	929
Galena	11,776	7,413	6,216	1,760	3,493	3,232	2,477	1,198	1,954	3,902	4,575	2,333	6,132	2,215
Ruby/Koktnes	8,786	4,010	1,844	351	1,352	2,420	1,459	4,586	4,445	2,016	3,286	2,251	3,269	3,228
Retained From Commercial														
District 4 Yukon River Subtotal (Excluding the Koyukuk River)	125,280	60,741	24,253	13,314	18,587	13,622	8,169	14,806	10,475	7,765	17,540	16,267	48,435	11,768
Huslia	11,042	14,895	10,005	7,368	7,857	13,670	8,343	6,014	4,885	2,372	840	449	10,233	8,228
Hughes	4,369	2,445	3,687	509	1,257	1,625	827	1,581 d	2,448	1,411	1,579	334	2,453	1,520
Altakaket	8,700 f	7,066	2,915 f	5,247	6,451	6,368	2,651	4,693 d	6,396	4,668	3,916	901	6,283 g	5,027
Alatna	- f	1,458	- f	72	962	490	52	365 d	140	209	145	13	746 g	262
Bettles		18	75	24	155	37	34	45	740	0	210	82	68	214
Koyukuk River Subtotal	24,111	25,882	16,682	13,220	16,682	22,190	11,907	12,698	14,609	8,660	6,690	1,779	19,783	15,351
District 4 Subtotal	149,391	86,623	40,935	26,534	35,269	35,812	20,076	27,504	25,084	16,425	24,230	18,046	68,218	27,119

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Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Tanana	10,876	13,972	7,756	5,905	2,779	4,553	4,245	7,022	3,660	5,190	2,526	1,966	8,258	4,870
Rampart	2,434	3,383	28	56	20	4,494	1,489	559	1,168	1,188	738	19	1,185	1,928
Fairbanks (permits) ^h j	1,493	0	0	25	1,068	706	465	360	722	2,958	424	57	517	563
Stevens Village	1,446	865	2,375	1,671	1,385	460	653	459	158	530	191	171	1,548	433
Beaver	657	214	124	108	2,355	12	134	655	36	572	2	15	692	209
Fort Yukon	1,187	7,717	1,760	145	11,974	1,700	3,830	2,043	998	26 k	134 k	30	4,557	2,143
Circle (permits) ^j	2,078 m	742	361 m	1,262	61	265	83	98	70	271	257	1	580 g	129
Central (permits) ^j	- m	129	- m	5	0	91	2	8	2	53	25	1	56 g	26
Eagle (permits) ^j	417	1,273	547	361	607	23	32	38	57	105	17	52	641	38
Other (permits) ^j n				187	32	291	24	21	232	616	130	2	110 p	142
Retained From Commercial							159	676						
<i>District 5 Yukon River Subtotal (Excluding Chandalan/Black Rivers)</i>	20,588	28,295	12,951	9,727	20,271	12,595	11,116	11,939	7,103	11,509	4,444	2,314	18,143	10,480
Venette	0	701	30	0	3,393	0	129	567	552	0	76	0	825	312
Chalkytsik	0	327	0	90	500	17	0	0	0	0	0	0	183	4
<i>Chandalan/Black Rivers Subtotal</i>	0	1,028	30	90	3,893	17	129	567	552	0	76	0	1,008	316
<i>District 5 Subtotal</i>	20,588	29,323	12,981	9,817	24,164	12,612	11,245	12,506	7,655	11,509	4,520	2,314	19,151	10,796
Manley ^r	267	3,731	2,457	2,250	1,716	850	1,310	1,405	1,657	1,219	576	211	2,084	1,306
Minto ^r	1,383	947	1,425	500	748	625	367	509	1,320	1,421	1,056	148	1,001	705
Nenana ^r	21,214	5,654	3,985	1,383	1,499	6,372	5,019	1,352	5,043	4,411	1,899	5,041	6,747	4,447
Fairbanks ^j s	1,461	0	0	152	1,096	1,342	97	3,693	3,528	392	271	604	542	2,165
Other ^s v		0	0	0	10	315	0	67	113	43	22	0	3	124
Retained From Commercial							6	3,518						
<i>District 6 Tanana River Subtotal</i>	24,325	10,332	7,868	4,285	5,069	9,504	6,798	10,544	11,661	7,486	3,824	6,004	10,376	8,746
Upper Yukon River Total	194,304	126,278	61,784	40,636	64,502	57,928	38,119	60,554	44,400	35,420	32,574	26,364	97,746	46,661
Alaska, Yukon River Total ^w	270,374	198,608	167,155	115,609	118,540	125,497	105,380	132,510	118,723	102,503	97,109	86,004	174,302	114,725
Alaska, Yukon Area Total	300,042	229,838	169,496	115,609	118,540	142,192	126,178	147,413	136,083	124,738	112,820	87,366	204,751	132,190

a Historic estimated subsistence harvests are available in each years respective Yukon Area Annual Management Report (1961 to 1996). Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households. Numbers include test fish catches given away. District 4 summer chum salmon subsistence harvest estimates prior to 1988 and District 5 and 6 prior to 1989 included commercially caught summer chum salmon carcasses retained for subsistence use. Beginning in 1988 and 1989, efforts were made to exclude commercial carcasses from subsistence harvest estimates. Blanks indicate harvest information was not collected.

b The village was not surveyed, harvest estimates were calculated from calendar and post card replies.

c Average harvest includes 1988, 1989 and 1992.

d Due to floods in 1994, Hughes, Allakaket, and Alatna were not surveyed. 1994 summer chum salmon harvest is estimated based on five-year-average 1989-1993.

f Alatna and Allakaket harvests are combined.

g Average harvest includes 1988 and 1990-1992.

h Average harvest includes 1989-1991.

j Harvests by Fairbanks subsistence use permit holders that fished in District 5 near the Yukon River bridge crossing.

k Salmon catches expanded for permits not returned and household interviews (1981-1989). Beginning in 1990, reported harvest is from returned permits only.

m Includes Birch Creek.

n Circle and Central harvests are combined.

p Other permit holders that fished in District 5 but did not reside in the villages listed.

r Average harvest includes 1990-1992.

s Permits required beginning in 1988 for Subdistricts 6-A and 6-B. In 1988 and 1989, permit and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.

l Harvests by Fairbanks subsistence use permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tanana River upstream of the Wood River.

v Other permit holders that fished in District 6 but did not reside in the villages listed.

w Does not include Coastal District.

Appendix D.3. Estimated fall chum salmon subsistence harvest in numbers of fish by fishing district and community of residence, Yukon Area, 1987-1998. a

Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Hooper Bay	105	1,711 b	146 b			127	113	284	207	392	0	0	661 c	199
Scammon Bay	117	551 b	10 b			79	7	63	147	0	0	34	213 c	43
Coastal District Subtotal	222	2,262	156			206	120	347	354	392	0	34	875	243
Sheldon Point	882	289	586	102	84	490	158	25	256	21	337	266	310	159
Alakanuk	3,748	1,194	430	267	193	401	182	73	631	100	900	865	497	377
Emmonak	8,180	1,792	840	2,353	2,027	1,828	1,507	3,441	1,614	1,501	1,039	867	1,728	1,820
Kotlik	5,677	2,200	3,058	2,613	1,831	2,697	5,923	1,348	2,197	2,525	856	1,365	2,440	2,570
District 1 Subtotal	18,467	5,475	4,914	5,335	3,935	5,216	7,770	4,887	4,688	4,147	3,132	3,163	4,975	4,927
Mountain Village	4,897	1,880	4,841	1,566	1,473	1,052	1,113	797	1,347	1,386	2,698	2,031	2,122	1,464
Pitkas Point	1,143	622	275	150	810	77	288	294	99	603	178	233	347	288
St. Marys	2,823	1,911	1,695	806	1,592	2,356	440	1,082	542	658	310	416	1,672	802
Pilot Station	583	1,372	1,872	1,941	1,082	1,170	1,017	1,527	575	448	1,106	1,162	1,483	935
Marshall	4,008	2,815	1,532	1,724	891	2,727	256	471	754	2,212	388	840	1,938	818
District 2 Subtotal	13,454	8,800	10,015	6,187	5,628	7,382	3,094	4,151	3,317	5,287	4,680	4,482	7,562	4,106
Russian Mission	1,255	1,151	308	878	425	648	172	11	865	587	0	137	682	327
Holy Cross	1,598	596	711	1,178	190	845	1,088	665	681	1,814	420	1,095	704	929
Shageluk	434	0	4	0	0	865	211	186	128	305	367	329	174	239
District 3 Subtotal	3,287	1,747	1,023	2,056	615	2,358	1,449	862	1,672	2,706	787	1,561	1,560	1,495
Lower Yukon River Total	35,208	15,822	15,952	13,578	10,178	14,956	12,313	9,900	9,687	12,140	8,599	9,208	14,097	10,528
Anvik	394	136	168	583	452	894	420	155	269	457	514	388	447	363
Grayling	4,750	1,760	830	1,405	3,616	2,893	2,083	811	1,155	1,759	1,531	848	2,121	1,468
Kaltag	7,474	2,293	1,654	2,327	2,834	2,522	704	830	644	1,049	1,142	499	2,326	834
Nulato	2,200	1,673	2,436	3,548	1,637	1,910	571	1,109	1,137	2,299	687	387	2,240	1,163
Koyukuk	2,492	587	2,460	860	2,761	2,817	2,052	1,049	814	2,458	1,954	1,583	1,897	1,665
Galena	10,509	4,308	6,436	3,202	5,525	2,393	3,255	3,963	3,202	6,620	3,370	1,915	4,373	4,082
Ruby/Kokrine	11,000	5,171	6,599	3,352	2,856	4,499	1,085	5,553	4,695	561	2,195	2,427	4,495	2,818
District 4 Yukon River Subtotal (Excluding the Koyukuk River)	38,819	15,928	20,583	15,275	19,681	18,028	10,170	13,270	11,916	15,203	11,403	7,827	17,899	12,392
Huslia	585	1,897	1,728	846	411	1,286	258	55	1,035	298	10	0	1,194	331
Hughes	586	311	260	70	270	325	169	0 d	263	274	51	60	247	151
Allakaket	1,477 f	326	1,969 f	2,470	475	1,452	233	0 d	260	961	270	11	1,181 g	345
Alatna	- f	117	- f	580	38	127	2	0 d	0	0	0	0	216 g	0
Bettles		0	0	0	0	14	0	0	583	50	0	0	4	127
Koyukuk River Subtotal	2,648	2,451	3,957	3,968	1,194	3,204	662	55	2,141	1,583	331	71	2,841	954
District 4 Subtotal	41,467	18,379	24,540	19,241	20,875	21,232	10,832	13,325	14,057	16,786	11,734	7,898	20,740	13,347

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Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Tanana	41,825	55,998	40,845	41,145	40,868	19,385	23,103	34,881	14,409	21,420	25,058	24,958	39,644	23,734
Rampart	5,092	3,600	2,472	10,818	5,801	5,701	3,272	1,007	1,403	898	646	100	5,878	1,445
Fairbanks (permits) h j	5,264	0	7	82	2,022	2,491	930	2,870	2,184	2,727	491	96	920	1,840
Stevens Village	7,538	1,451	6,633	3,857	2,481	150	862	45	3,194	991	1,585	1,078	2,814	1,335
Beaver	6,750	96	7,242	757	7	381	592	2,069	1,231	9	243	409	1,693	849
Fort Yukon	15,200	2,766	27,790	11,627	7,487	2,284	2,380	6,827	9,198	8,144 k	6,119 k	3,035	10,387	6,533
Circle (permits) j	7,891	3,846	4,478	6,839	6,340	6,279	349	4,581	5,102	5,308	3,707	37	5,726 g	3,809
Central (permits) j	-	750	-	165	73	100	0	0	0	132	0	0	272 g	26
Eagle (permits) j	19,878	14,800	11,557	8,027	7,985	6,830	2,070	8,263	13,115	14,916	14,488	543	9,600	10,570
Other (permits) j n				529	100	0	1,750	0	830	505	421	50	210 p	701
<i>District 5 Yukon River Subtotal (Excluding Chandalar/Black Rivers)</i>	108,038	83,107	101,024	83,646	73,144	42,361	35,408	60,343	50,664	55,048	52,758	30,302	77,044	50,844
Venetie	2,774	34	7,977	5,377	758	3,086	7,881	4,302	6,085	7,195	1,564	858	3,442	5,405
Chalkyitsik	2,888	1,068	3,000	1,490	100	274	475	1,751	845	1,230	936	433	1,188	1,047
<i>Chandalar/Black Rivers Subtotal</i>	5,460	1,102	10,977	6,867	858	3,340	8,356	6,053	6,930	8,425	2,500	1,091	4,629	6,453
<i>District 5 Subtotal</i>	113,498	84,209	112,001	90,513	74,002	45,701	43,764	66,396	57,594	63,473	55,258	31,393	81,673	57,297
Manley r	4,267	6,899	21,087	25,880	13,243	7,010	3,215	13,722	20,272	10,662	5,887	4,411	14,820	10,752
Minto r	5,419	2,615	2,005	3,652	5,276	3,017	301	1,419	4,782	4,381	2,381	505	3,313	2,649
Nonana r	26,909	26,889	25,340	12,464	17,932	13,253	5,929	11,201	15,500	14,207	3,799	6,781	19,176	10,127
Fairbanks (permits) j s	0	0	0	309	1,871	1,394	58	5,006	6,384	5,736	4,031	960	675	4,243
Other r t			10,222	2,283	2,347	1,039	352	2,249	2,230	1,481	3,472	1,713	3,973	1,957
<i>District 6 Tanana River Subtotal</i>	36,595	36,403	58,654	44,588	40,469	25,713	9,853	33,597	49,188	36,467	19,550	14,370	41,956	29,727
<i>Upper Yukon River Total</i>	191,560	138,991	195,195	154,322	135,346	92,848	64,449	113,318	120,819	116,726	86,542	53,661	144,369	100,371
<i>Alaska, Yukon River Total v</i>	226,768	154,813	211,147	167,900	145,524	107,802	76,782	123,218	130,506	128,868	95,141	62,867	158,466	110,899
<i>Alaska, Yukon Area Total</i>	226,990	157,075	211,303	167,900	145,524	107,808	76,882	123,665	130,880	129,258	95,141	62,901	159,340	111,141

a Historic estimated subsistence harvests are available in each years respective Yukon Area Annual Management Report (1961 to 1998). Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households. Numbers include test fish catches given away. Includes commercial related harvest to produce roe sold, 1982-1988. Blanks indicate harvest information was not collected.

b The village was not surveyed, harvest estimates were calculated from calendar and post card replies.

c Average harvest includes 1988, 1989 and 1992.

d Due to floods in 1994, Hughes, Allakaket, and Alatna were not surveyed and the estimated harvest of fall chum salmon was zero.

f Alatna and Allakaket harvests are combined.

g Average harvest includes 1988 and 1990-1992.

h Harvests by Fairbanks subsistence use permit holders that fished in District 5 near the Yukon River bridge crossing.

j Salmon catches expanded for permits not returned and household interviews (1961-1989). Beginning 1990, reported harvest is from returned permits only.

k Includes Birch Creek.

m Circle and Central harvests are combined.

n Other permit holders that fished in District 5 but did not reside in the villages listed.

p Average harvest includes 1990-1992.

r Permits required beginning in 1988 for Subdistricts 6-A and 6-B. In 1988 and 1989, permit and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.

s Harvests by Fairbanks subsistence use permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tanana River upstream of the Wood River.

t Other permits holders that fished in District 6 but did not reside in the villages listed.

v Does not include Coastal District.

Appendix D.4. Estimated coho salmon subsistence harvest in numbers of fish by fishing district and by community of residence, Yukon Area, 1987-1998. a

Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Hooper Bay	89	1,523 b	211 b			28	0	1	48	92	0	145	587 c	28
Scammon Bay	64	326 b	2 b			31	40	80	104	0	0	204	120 c	45
Coastal District Subtotal	133	1,849	213			59	40	81	152	92	0	349	707	73
Sheldon Point	308	169	487	78	35	441	78	52	419	138	51	229	242	148
Alakanuk	1,116	634	334	156	391	966	138	94	658	103	882	292	496	375
Emmonak	3,497	1,578	1,259	1,283	801	666	196	959	485	594	356	698	1,117	518
Kotlik	1,475	2,008	2,997	1,784	581	3,353	1,931	2,167	689	1,610	534	954	2,145	1,385
District 1 Subtotal	6,396	4,389	5,077	3,301	1,808	5,428	2,343	3,272	2,251	2,445	1,823	2,171	4,000	2,427
Mountain Village	2,481	1,314	2,385	1,754	868	1,971	447	988	921	276	1,089	954	1,658	740
Pitkas Point	273	1,015	801	52	347	641	349	384	554	691	427	305	531	477
St. Marys	1,467	2,132	370	483	1,270	2,130	102	814	154	292	329	290	1,273	298
Pilot Station	300	878	379	1,968	553	300	477	811	241	1,258	323	413	815	622
Marshall	2,373	1,767	1,304	2,107	258	1,545	320	1,124	272	958	256	335	1,396	586
District 2 Subtotal	6,894	7,104	5,039	6,344	3,297	6,587	1,695	3,881	2,142	3,475	2,424	2,297	5,674	2,723
Russian Mission	423	604	20	688	396	1,148	152	55	891	255	10	233	571	273
Holy Cross	259	935	517	338	944	105	88	171	0	0	20	100	568	56
Shageluk	72	128	0	0	0	296	39	137	0	189	736	67	85	220
District 3 Subtotal	754	1,667	537	1,028	1,340	1,549	279	363	891	444	766	400	1,224	549
Lower Yukon River Total	14,044	13,180	10,653	10,671	6,445	13,562	4,317	7,516	5,284	6,364	5,013	4,868	10,898	5,699
Anvik	405	97	40	238	347	202	115	95	10	44	24	20	184	58
Grayling	599	692	969	10	1,363	859	164	36	97	236	1,055	133	779	318
Kallag	0	0	792	501	1,260	2,105	334	245	426	298	60	71	932	273
Nulato	85	234	276	845	75	435	37	27	25	149	444	34	373	136
Koyukuk	894	10	110	162	307	1,877	70	305	33	476	345	421	493	246
Galena	1,349	1,029	415	572	422	1,398	124	803	275	780	1,002	322	767	597
Ruby/Kokrines	0	2,169	1,069	974	410	1,299	308	1,957	607	376	474	1,459	1,184	744
District 4 Yukon River Subtotal (Excluding the Koyukuk River)	3,332	4,231	3,671	3,300	4,184	8,175	1,152	3,488	1,473	2,359	3,404	2,460	4,712	2,371
Hustla	124	201	150	235	150	233	9	47	307	18	50	128	194	86
Hughes	0	104	91	43	9	21	3	0 d	153	51	250	5	54	91
Allakaket	23 f	160	118	31	25	0	3	0 d	0	39	50	0	67	18
Alatna	- f	18	0	5	83	0	0	0 d	0	0	0	0	21	0
Bettles		0	0	0	0	0	0	0	1	0	0	0	0	0
Koyukuk River Subtotal	147	483	359	314	267	254	15	47	461	108	350	133	335	196
District 4 Subtotal	3,479	4,714	4,030	3,614	4,451	8,429	1,167	3,515	1,934	2,467	3,754	2,593	5,048	2,567

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Community	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1988-1992 Average	1993-1997 Average
Tanana	8,880	16,922	5,518	8,580	4,448	11,406	5,576	2,587	2,154	6,110	3,045	2,572	9,375	3,894
Rampart	81	842	87	591	58	75	38	99	0	5	34	20	331	35
Fairbanks (permits) g h	6	0	0	5	8	34	0	25	18	42	26	11	9	22
Stevens Village	0	604	208	479	0	20	0	0	1	2	1	63	262	1
Beaver	0	164	774	172	1	398	135	10	20	7	0	0	302	34
Fort Yukon	41	370	406	727	380	341	5	963	4	157	251	39	445	276
Circle (permits) h k	0	41	1	201	5	54	10	30	0	0	210	0	60	50
Central (permits) h k	0	0	0	5	0	0	0	0	0	0	0	0	1	0
Eagle (permits) h	0	11	0	0	0	3	85	0	1	1	2	132	3	18
Other (permits) h m	0	0	165	450	12	0	0	0	7	0	0	2	125	1
<i>District 5 Yukon River Subtotal (Excluding Chandalar/Black Rivers)</i>	8,808	18,954	7,159	11,210	4,912	12,331	5,849	3,714	2,205	6,324	3,569	2,839	10,913	4,332
Venetie	17	0	2	348	12	45	135	4	0	284	7	0	81	82
Chalkyitsik	2	801	28	4	7	0	0	458	0	0	7	0	168	83
<i>Chandalar/Black River Subtotal</i>	19	801	28	352	19	45	135	460	0	284	14	0	249	175
<i>District 5 Subtotal</i>	6,827	19,755	7,187	11,562	4,931	12,376	5,984	4,174	2,205	6,588	3,583	2,839	11,162	4,507
Manley n	1,467	2,103	5,310	7,574	6,381	4,725	1,535	10,410	7,395	2,462	3,236	2,382	5,215	5,008
Minto n	671	2,729	1,179	818	526	614	300	2,616	338	1,223	364	31	1,173	968
Nenana n	19,592	25,389	7,593	7,381	10,171	8,895	1,314	9,387	7,142	7,883	5,147	3,519	11,882	8,175
Fairbanks (permits) h p	0	0	0	66	2,501	2,281	0	2,103	3,078	2,314	1,230	786	970	1,745
Other n r			4,759	1,774	2,002	1,039	1,155	1,973	851	1,011	1,618	774	2,394 s	1,322
Retained From Commercial							2,900							
<i>District 6 Tanana River Subtotal</i>	21,730	30,201	18,841	17,813	21,561	17,554	4,304	29,389	18,802	14,893	11,595	7,472	21,633	15,217
<i>Upper Yukon Area Total</i>	32,036	54,670	30,058	32,789	30,943	38,359	11,455	37,078	22,941	23,948	18,932	12,904	37,843	22,291
<i>Alaska, Yukon River Total t</i>	46,080	87,830	40,711	43,460	37,388	51,921	15,772	44,594	28,225	30,312	23,945	17,772	48,741	27,980
<i>Alaska, Yukon Area Total</i>	46,213	69,679	40,924	43,480	37,388	51,980	15,812	44,675	28,377	30,404	23,945	18,121	49,448	28,063

a Historic estimated subsistence harvests are available in each years respective Yukon Area Annual Management Report (1961 to 1998). Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households. Numbers include test fish catches given away. Blanks indicate harvest information was not collected.

b The village was not surveyed, harvest estimates were calculated from calendar and post card replies.

c Average harvest includes 1988, 1989 and 1992.

d Due to floods in 1994, Hughes, Allakaket, and Alatna were not surveyed and the estimated harvest of coho salmon was zero.

e Alatna and Allakaket harvests are combined.

f Harvests by Fairbanks subsistence use permit holders that fished in District 5 near the Yukon River bridge crossing.

g Salmon catches expanded for permits not returned and household interviews (1981-1989). Beginning 1990, reported harvest is from returned permits only.

h Includes Birch Creek.

i Circle and Central harvests are combined.

j Other permit holders that fished in District 5 but did not reside in the villages listed.

k Permits required beginning in 1988 for Subdistricts 8-A and 8-B. In 1988 and 1989, permit and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.

l Harvests by Fairbanks subsistence use permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tanana River upstream of the Wood River.

m Other permits holders that fished in District 6 but did not reside in the villages listed.

n Average harvest includes 1989-1992.

o Does not include Coastal District.

Appendix D.5. Subsistence salmon harvests taken under authority of a permit in portions of District 5, Yukon Area, 1974-1998.^a

Yukon River "Bridge" Area Subsistence Salmon Fishery ^b							
Year	Number of Permits Issued	Number of Permits Returned	Number Reporting Harvest	Reported Harvest			Coho
				Chinook	Summer Chum ^c	Fall Chum ^c	
1974	29	-	-	591	-	1,857	1,271
1975	19	-	-	727	-	778	70
1976	28	-	18	531	-	974	-
1977	38	-	-	487	-	2,567	-
1978	57	-	-	1,333	-	9,735	-
1979	55	-	41	2,194	-	12,374	-
1980	70	-	67	1,350	-	6,488	36
1981	57	-	24	1,095	-	12,034	-
1982	64	-	44	1,935	-	11,328	20
1983	68	-	46	2,672	-	15,059	-
1984	67	-	54	4,676	-	27,869	399
1985	55	-	42	2,618	-	21,832	33
1986	76	-	58	3,827	-	18,690	759
1987	16	-	14	1,818	2,091	7,631	6
1988	24	21	18	1,747	2,097	3,183	606
1989	26	20	13	2,483	574	1,157	309
1990	26	25	16	2,033	3,493	1,109	455
1991	52	46	34	2,529	1,295	3,953	20
1992	45	42	33	2,241	975	2,491	34
1993	49	47	36	3,767	492	2,915	16
1994	50	49	36	3,073	384	2,911	25
1995	59	59	39	3,253	954	2,244	59
1996	47	45	31	1,157	3,475	2,727	42
1997	44	42	28	1,588	683	491	26
1998	48	47	31	1,685	103	156	15
Five Year Average 1993-1997	50	48	34	2,568	1,198	2,258	34
Ten Year Average 1988-1997	42	40	28	2,387	1,442	2,318	159
Upper Yukon River Area Subsistence Salmon Fishery ^d							
Year	Number of Permits Issued	Number of Permits Returned	Number Reporting Harvest	Reported Harvest			Coho
				Chinook	Summer Chum ^c	Fall Chum ^c	
1979	75	-	6	4,063	-	30,475	114
1980	48	-	39	3,649	-	18,477	6
1981	71	-	51	4,510	-	38,333	-
1982	60	-	61	3,833	-	15,432	-
1983	53	-	52	2,831	-	23,708	-
1984	58	-	54	2,543	-	21,675	17
1985	59	-	36	2,419	-	19,059	2
1986	40	-	52	4,148	-	20,701	43
1987	51	51	58 ^f	3,602	2,495	27,369	0
1988	58	57	50	2,783	2,134	9,078	101
1989	59	56	42	1,186	68	7,515	1
1990	81	75	54	3,746	1,629	14,992	206
1991	70	69	48	3,219	658	14,898	5
1992	85	79	54	2,984	409	12,009	57
1993	79	79	49	1,910	118	2,419	95
1994	79	76	51	3,093	145	12,844	30
1995	87	87	53	3,628	129	19,047	1
1996	86	84	51	3,458	528	20,861	1
1997	98	93	60	3,148	393	18,616	212
1998	101	95	54	3,562	55	630	132
Five Year Average 1993-1997	86	84	53	3,047	263	14,757	68
Ten Year Average 1988-1997	78	76	51	2,916	621	13,228	71

a Prior to 1988 the reported harvest was expanded for permits not returned. Beginning in 1988, reported harvest was not expanded. Dashes in the table indicate the information is not available.

b That portion of the Yukon River drainage from Hess Creek to Dall River.

c Summer chum and fall chum salmon undifferentiated from 1974-1986.

d That portion of the Yukon River drainage from 22 Mile Slough, above the village of Fort Yukon to the United States/Canadian border.

f Some fishermen reporting harvests did not have permits.

Appendix D.6. Subsistence salmon harvests taken under authority of a permit, Tanana River drainage, 1973-1998. ^a

Subdistrict 6-A Subsistence Salmon Fishery							
Year	Number of Permits Issued	Number of Permits Returned	Number Reporting Harvest	Reported Harvest			
				Chinook	Summer Chum	Fall Chum	Coho
1988 ^b	28	24	18	845	1,389	9,165	3,455
1989 ^{b, c}	29	28	24 ^d	651	1,918	25,266	5,292
1990 ^c	42	36	26	1,369	2,250	27,957	8,408
1991	45	41	31	420	1,716	17,472	8,486
1992	38	35	26	508	450	5,999	5,028
1993 ^c	42	41	22	331	784	2,617	1,317
1994 ^f	37	37	30	576	3,793	18,076	12,449
1995	41	38	29	456	4,898	23,522	11,344
1996	31	29	23	209	1,338	18,931	5,959
1997	33	32	21	887	542	10,621	3,703
1998	31	31	19	512	519	4,726	1,526
Five Year Average 1993-1997	37	35	25	492	2,271	14,753	6,954
Subdistrict 6-B Subsistence Salmon Fishery							
Year	Number of Permits Issued	Number of Permits Returned	Number Reporting Harvest	Reported Harvest			
				Chinook	Summer Chum	Fall Chum	Coho
1988	75	66	52	3,721	3,167	18,902	18,906
1989 ^g	60	51	37 ^d	455	363	18,506	8,453
1990 ^g	70	58	38	1,234	1,966	16,332	9,155
1991 ^g	87	78	51	1,796	2,373	21,629	11,971
1992 ^g	98	89	57	1,587	7,820	18,782	11,409
1993	99	89	38	1,341	5,976	7,166	2,987
1994	102	94	49	1,337	2,035	13,726	12,480
1995	98	98	59	1,322	6,712	25,364	7,458
1996	105	96	59	968	6,138	17,439	8,934
1997	103	95	55	1,825	3,282	8,723	7,892
1998	94	84	46	1,406	5,485	9,573	5,937
Five Year Average 1993-1997	101	94	52	1,359	4,829	14,484	7,950

-Continued -

Upper Tanana River Drainage Subsistence Salmon Fishery

Year	Number of Permits Issued	Number of Permits Returned	Number Reporting Harvest	Reported Harvest			
				Chinook	Summer Chum	Fall Chum	Coho
1988	0	0	0	0	0	0	0
1989	2	2	2	5	0	39	0
1990	1	1	0	0	0	0	0
1991	8	7	6	0	0	288	14
1992	11	11	4	0	0	36	1
1993	10	10	8	0	0	5	0
1994	7	7	3	0	0	202	15
1995	50	46	12	0	0	88	0
1996	42	39	15	0	10	97	0
1997	61	58	26	0	0	200	0
1998	46	46	17	0	0	71	9
Five Year Average 1993-1997	34	32	13	0	2	118	3

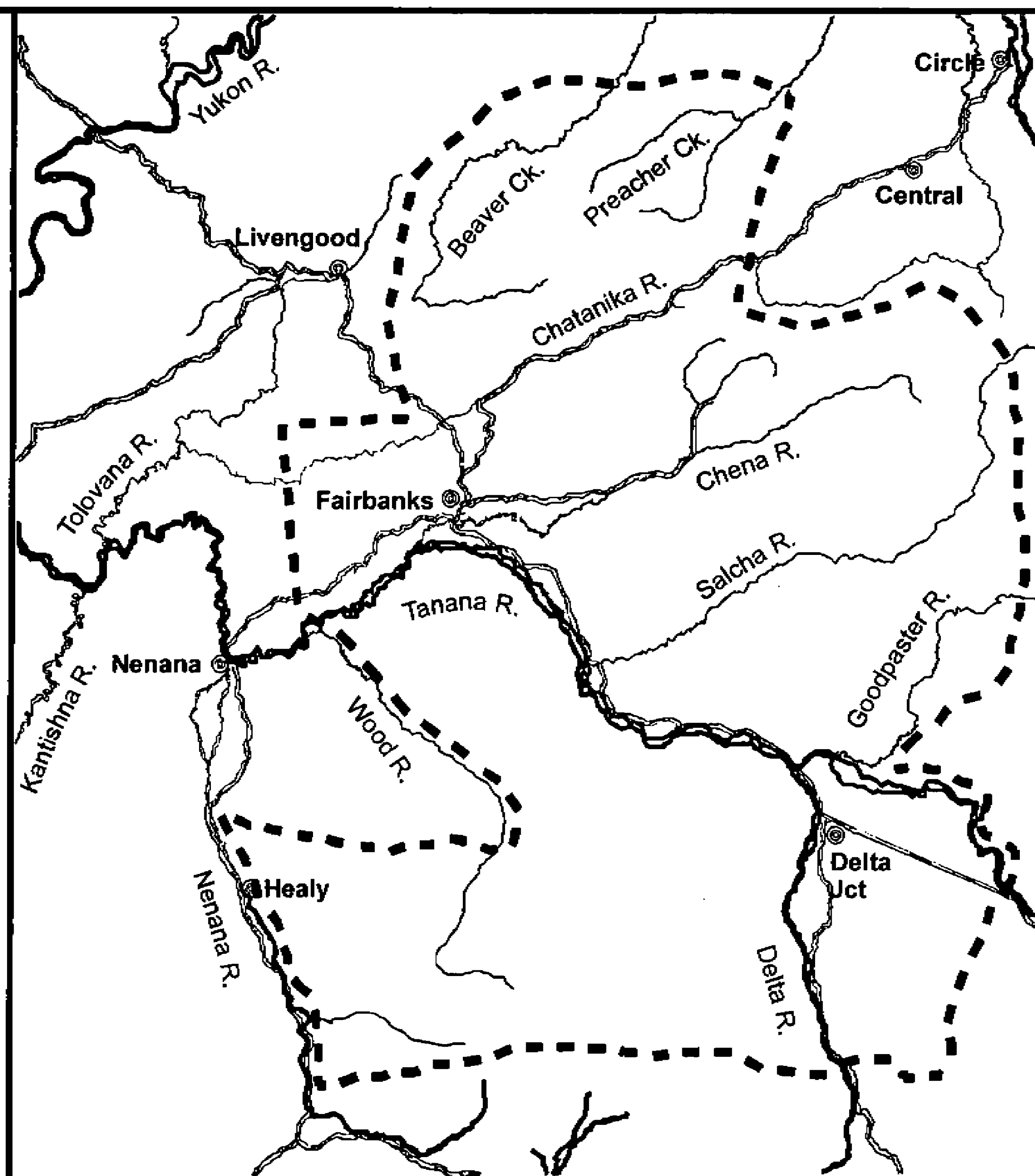
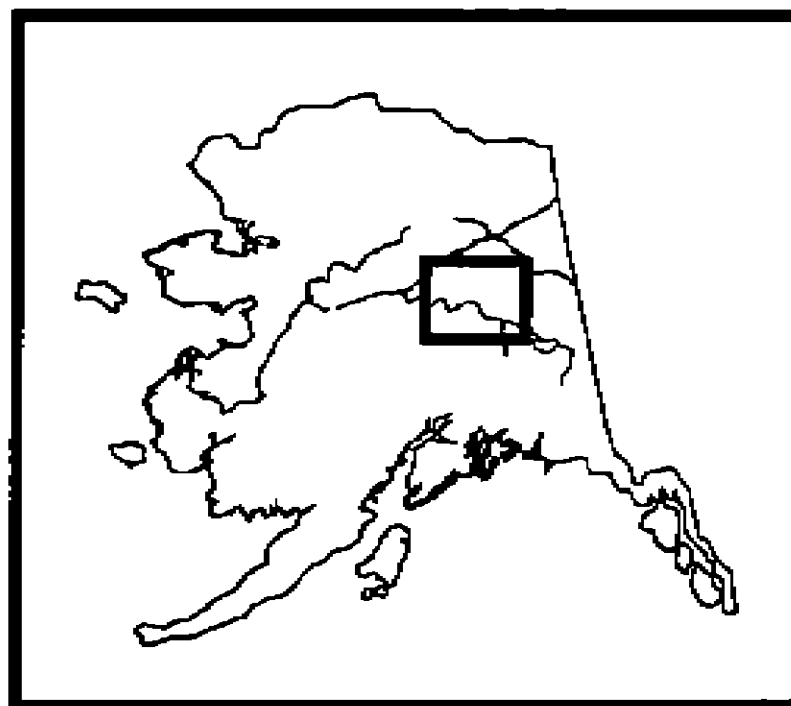
- a Prior to 1988, salmon harvests were expanded for permits not returned. Beginning in 1988, the reported harvests were not expanded. Dashes in the table indicate the information is not available.
- b Many Subdistricts 6-A fishermen did not obtain a permit in 1988 and 1989.
- c Includes salmon given away as part of the Department's test fishing project in Manley.
- d Includes harvests reported by fishermen that did not have permits.
- f Beginning in 1994, a separate Kantishna River drainage permit was required. The Subdistrict 6-A harvest totals include the harvest from the Kantishna River drainage.
- g Includes salmon given away as part of the Department's test fish project in Nenana.

Appendix D.7. Personal use salmon harvests taken under authority of a permit, Tanana River drainage, 1987-1998.^a

Subdistrict 6-C Personal Use Salmon Fishery							
Year	Number of Permits Issued	Number of Permits Returned	Number Reporting Harvest	Reported Harvest			
				Chinook	Summer Chum	Fall Chum	Coho
1987	132 ^b	-	60 ^c			3,316	2,465
1988	208	162	120	317	1,182	2,074	1,125
1989	175	160	112	397	991	1,770	731
1990	152	144	102	442	918	1,353	1,120
1991 ^d	0	0	0	0	0	0	0
1992 ^d	0	0	0	0	0	0	0
1993	133	131	79	426	674	163	0
1994 ^d	0	0	0	0	0	0	0
1995	139	138	91	399	780	863	417
1996	129	125	73	215	905	356	198
1997	112	109	61	313	391	284	350
1998	103	101	52	357	84	2	9
Five Year Average 1990, 1993, and 1995-1997							
	133	129	81	359	734	604	417

- a Personal use fishery during 1987 applied to nonrural residents harvesting only fall chum salmon. Beginning in 1988, nonrural personal use fishing applied to all salmon species and reported harvest is from returned permits only. Effective July 1, 1990 all Alaskan residents became eligible for subsistence fishing permits. In 1993 the Board established the Fairbanks Nonsubsistence Area (FNA), this designated fishermen residing in the area as personal use harvesters. In 1994 a Superior Court decision invalidated the FNA and subsistence regulations applied. In 1995 the Board amended the FNA to apply personal use regulations to all fishermen fishing in the area. Dashes in the table indicate the information is not available.
- b Includes 60 former subsistence fishermen who were reissued personal use permits to fish for fall chum salmon
- c Some fishing families used both subsistence and personal use permits.
- d From July 1, 1990 through 1992, and in 1994, the regulations did not provide for a personal use fishery in this area.

5 AAC 99.015 JOINT BOARD NONSUBSISTENCE AREAS. (4) The Fairbanks Nonsubsistence Area is comprised of the following: within Unit 20(A) as defined by 5 AAC 92.450(20)(A) east of the Wood River drainage and south of the Rex trail but including the upper Wood River drainage south of its confluence with Chicken Creek, within Unit 20(B) as defined by 5 AAC 92.450(20)(B) the North Star Borough and that portion of the Washington Creek drainage east of the Elliot Highway, within Unit 20(D) as defined by 5 AAC 92.450(20)(D) west of the Tanana River between its confluence's with the Johnson and Delta Rivers, west of the west bank of the Johnson River, and north and west of the Volkmar drainage, including the Goodpaster River drainage, and within Unit 25(C) as defined by 5 AAC 92.450(25)(C) the Preacher and Beaver Creek drainages.



Appendix D.8. Map of the Fairbanks Nonsubsistence Area, 1998.

APPENDIX E

YUKON RIVER SALMON ESCAPEMENT

Appendix E.1. Yukon River drainage salmon spawning biological escapement goals (BEG) for selected species and streams, 1998.

Stream	Escapement Goals ^a			
	Chinook	Summer Chum	Fall Chum	Coho
Andreafsky River				
East Fork	> 1,500	> 109,000		
West Fork	> 1,400	> 116,000		
Anvik River				
Aerial				
Mainstem (entire drainage)	> 1,300			
Yellow River to McDonald Creek	> 500			
Sonar		> 500,000 ^b		
Nulato River				
North Fork	> 800	> 53,000		
South Fork	> 500			
Hogatza River				
Clear Creek		> 8,000		
Caribou Creek		> 9,000		
Gisasa River	> 600			
Chena River				
Mainstem from Flood Control Dam to Middle Fork	> 1,700			
Salcha River				
TAPS to Caribou Creek	> 2,500	> 3,500		
Sheenjek River			> 64,000 ^c	
Fishing Branch River (YT, Canada)			50,000-120,000 ^d	
Toklat River			> 33,000 ^c	
Delta River Index Areas			> 11,000 ^c	> 9,000 ^j
Mainstem Yukon River in Y.T., Canada ^b	33,000-43,000 ^{f,g}		> 80,000 ^{g,h}	

a Index streams have been designated because of their importance as spawning areas and/or by their geographic location with respect to other unsurveyable salmon spawning streams in the general area. Escapement goals represent the approximate number of desired spawners considered necessary to maintain the historical yield from the stocks and are based upon historical performance, i.e., they are predicated upon some measure of historic average. Unless otherwise indicated, escapement goals are based upon aerial survey index estimates which do not represent total escapement but do reflect annual spawner abundance when using standard survey methods under acceptable survey conditions. These survey goals represent the latest review and revision by ADF&G (March 1992), unless otherwise noted.

b Escapement goals of total spawning abundance based upon sonar, weir, mark-and-recapture, or expansions from inseason point estimates.

c Escapement goals developed by ADF&G for November 1990 U.S./Canada JTC meeting.

d Escapement goals developed by JTC in October 1987. (see page 42 of the October 6-8, 1987 JTC report).

f Escapement goals developed by JTC in March 1987. Additionally, a rebuilding step escapement goal for years 1996-2001 of 28,000 chinook salmon has been agreed to by the U.S. and Canada.

g Estimated total spawning escapement excluding the Porcupine River (estimated mainstem Yukon River border passage minus Canadian harvests).

h Escapement goals developed by JTC in November 1990.

j Escapement goals established by ADG&G in March 1993.

Appendix E.2. Salmon spawning escapement estimates for the Yukon River drainage, 1998. *

Stream (drainage)	Date	Survey Rating	Chinook	Summer Chums	Fall Chums	Coho
Andreafsky River						
East Fork (weir count) ^a	6/23-9/13		4,011	67,591	--	5,417
East Fork (aerial)	7/24	Good	(1,027)	--	--	--
West Fork (aerial)	7/22	Poor	1,249	--	--	--
Andreafsky Subtotal			5,260	67,591	--	5,417
Yukon River (Pilot Station)						
Main River (Biosonics Sonar)	6/6-9/9		(122,046)	(830,633)	(397,157)	(176,792)
Innoko River						
Illinois Creek ^{b, v}	11/8		--	--	0	16
Anvik River						
Mainstem (aerial)						
Yellow R. to McDonald Cr. (index)	7/23	Poor	648	--	--	--
Above McDonald Cr.	7/23	Poor	61	--	--	--
Bendix Sonar Estimate	6/22-7/24		--	471,865	--	--
Anvik Subtotal			709	471,865	--	--
Kaitag River, counting tower ^c						
	6/18-7/25		87	8,113	--	--
Nulato River						
Mouth to Forks (aerial)	7/31	Poor	(4)	--	--	--
South Fork to Drill Hole (aerial)	7/31	Fair -Good	(546)	--	--	--
North Fork to Kalsik Cr. (aerial)	7/31	Fair	(503)	--	--	--
Tower count (both forks total) ^k	6/22-7/23		1,536	49,140	--	--
Nulato Subtotal			1,536	49,140	--	--
Total Lower Yukon River (downstream of Koyukuk River)			7,592	596,709	0	5,433
Koyukuk River Drainage						
Gisasa River (weir count) ^a	6/21-8/2	Unexpanded cts	(1,997)	(14,794)	--	--
Gisasa River (weir count) ^a		Expanded (ADF)	2,356	18,228	--	--
Gisasa River (aerial survey)	7/31	Poor-Fair	(889)	--	--	--
Kateel River	7/31	Poor	48	101	--	--
Box River	7/31	Good	9	50	--	--
Arvesta Creek	7/31	Fair	13	0	--	--
Kateel Subtotal			70	151	--	--
Dakli River	7/31	Fair	3	642	--	--
Wheeler Creek	7/31	Fair	0	595	--	--
Dakli Subtotal			3	1,237	--	--
Hogatza River drainage						
Clear Creek (Tower) ^{u, w}	6/13	Incomplete	0	212 ^w	--	--
Clear Creek (aerial)	7/31	Incomplete	0	(120)	--	--
Hogatza Subtotal			0	212	--	--
Henshaw Creek						
	8/1	Fair	97	151	--	--
South Fork Koyukuk River						
Aerial	8/1	Poor-Fair	31	0	--	--
Jim River (aerial)	8/1	Fair	45	24	--	--
SF Koyukuk Subtotal			76	24	0	0
Total Koyukuk River			2,602	20,003	0	0
Tozitna River						
	7/22	Poor	0	7	--	--
Melosi Hot Springs Creek						
	7/22	Fair	5	395	--	--
Total Yukon River (downstream of Tanana River)			10,199	617,114	0	5,433

-Continued-

Stream (drainage)	Date	Survey Rating	Chinook	Summer Chums	Fall Chums	Coho
Tanana River Drainage						
Kantishna River Drainage						
Toklat Springs						
Floodplain Sloughs ^b	10/16-18	Good	--	--	(6,281)	41
Geiger Creek ^b	10/16	Good	--	--	(2,115)	157
Sushana River ^b	10/17	Good	--	--	(5,008)	0
Population Estimate ^f			--	--	15,605	--
Toklat Subtotal			0	0	15,605	198
Total Kantishna River			0	0	15,605	198
Tanana River Tagging (upstr Kantishna River) ^g	8/17-10/5		--	--	(62,384)	--
Chatanika River (tower estimate) ^{g,i}	7/7-7/31	Expanded cts	864	663	--	--
Nenana River Drainage						
Nenana mainstem immediately upstr Teklanik	10/20	Good	--	--	42	2,771
Seventeen Mile Slough (combo boat, foot) ^u	9/28	Good	--	--	218	1,413
Seventeen Mile Slough	10/20	Fair	--	--	(98)	(1,201)
Lost Slough (western floodplain)	10/20	Good	--	--	0	1,360
Lost Slough (western floodplain) ^u	9/28	Good	--	--	114	(650)
Julius Creek (boat - below Shores Landing)	9/17	Good	--	--	0	(25)
Clear Creek (aerial - upstr Glacier Cr) ^u	10/9	Good	--	--	0	25
Glacier Creek (boat) ^u	10/1	Good	--	--	0	345
June Creek ^{b,u}	10/30	Poor	--	--	0	25
Lignite Spring (weir) ^y	9/1-10/26		--	--	0	(51)
(Combo weir, foot survey) ^{y,z}	10/4		--	--	0	239
Nenana Subtotal			0	0	374	6,178
Chena River						
Mainstem River (aerial)	7/20, 7/31	Poor	(440)	(24)	--	--
MCD to Middle Fk (aerial/index area)	7/20, 7/31	Poor	(386)	(24)	--	--
Counting Tower Estimate ^{g,i}	6/26-8/9		4,745	5,901	--	--
Chena Subtotal			4,745	5,901	--	--
Sakcha River						
Mainstem River (aerial)	8/4	Poor	(2,055)	(390)	--	--
TAPS to Caribou Cr (aerial/index area)	8/4	Poor	(1,923)	(370)	--	--
Counting Tower Estimate ^{g,i}	6/26-8/9		5,027	17,289	--	--
Sakcha Subtotal			5,027	17,289	--	--
Mainstem Tanana sloughs (aerial)						
Between Silver Fox lodge and L Delta R.	11/6	Poor	--	--	391	0
Under Whitestone bridge	11/6	Poor	--	--	252	0
Between Bluff Cabin slough and Clearwater						
Lake outlet slough	11/6	Poor	--	--	525	0
Clearwater Lake outlet slough	11/6	Poor	--	--	680	0
One mile slough	11/6	Poor	--	--	169	0
Pearse slough area	11/6	Poor	--	--	500	0
Mainstem Tanana Subtotal			0	0	2,517	0
Goodpaster River (aerial)	7/15; 8/2	Fair	591	10	--	--
Delta River						
Foot Survey (peak count)	11/5	Good	--	--	(5,703)	61
Population Estimate ⁱ			--	--	7,804	--
Bluff Cabin Slough (BCS) ^{b,x}	11/5	Good	--	--	2,110	3
Clearwater Lake Outlet ^{g,h}	10/20	Good	--	--	15	2,775
Clearwater Lake Inlet (aerial) ^g	10/21	Good	--	--	0	350
Delta Clearwater River ^{g,h}	10/20	Good	--	--	11	11,100
Tributaries (aerial) ^g	10/21	Good	--	--	0	2,775
Total Tanana River			11,227	23,863	28,436	23,440

-Continued-

Stream (drainage)	Date	Survey Rating	Chinook	Summer Chums	Fall Chums	Coho
'Rampart-Rapids' tagging estimate ^{B,Q}	8/3-9/20		--	--	(187,923) ^{Pre}	--
Chandalar River splitbeam sonar ^Q	8/8-9/25		--	--	75,811 ^{Pre}	--
Porcupine River Drainage						
Sheenjek River						
Bendix Sonar Estimate	8/7-9/30		--	--	33,058	--
Fishing Branch River						
Weir Passage ^M	8/26-10/8		--	--	13,248 ^{Pre}	--
Total Porcupine River			--	--	46,306 ^{Pre}	--
Total Alaskan Portion of Drainage			21,426	640,977	137,305 ⁿ	28,873
Yukon Territory Streams ^M						
Chandindu River (12-mile R.) (weir)	7/4-8/25		132	--	--	--
White River						
Kluane River	10/26	Good	--	--	7,337	--
Tincup Creek	8/20	Good	53	--	--	--
White Subtotal			53	--	7,337	--
Ross River						
Blind Creek (weir)	7/19-8/19		373	--	--	--
Tatchun Creek ^b	8/25	Fair	(189)	--	--	--
Tatchun Creek (weir)	7/15-9/5		405	--	--	--
Little Salmon River	8/19	Good	361	--	--	--
Big Salmon River						
Big Salmon Lake to vicinity Souch Cr.	8/21	Good	523	--	--	--
Teslin River Drainage						
Mainstem (Indian R to 1st left bend w/s of sl	10/31	Fair	--	--	236	--
Upper Teslin River	8/27		13	--	--	--
Morley River	8/27		49	--	--	--
Jennings River	8/27		8	--	--	--
Gladys River	8/27		15	--	--	--
Needle Rock Creek	8/26		29	--	--	--
Mica Creek	8/26		17	--	--	--
Teslin Subtotal			131	--	236	--
Nisutlin River						
Mainstem (Sidney Cr.-100mile Cr.)	8/21	Good	146	--	--	--
Wolf River (Wolf Lk.-Fish Lk. outlet)	8/21	Good	66	--	--	--
Nisutlin Subtotal			212	--	--	--
MacIntyre Creek (weir)	8/2-9/1		8	--	--	--
Whitehorse Fishway	7/29-9/3		777	--	--	--
Wolf Creek (weir)			7	--	--	--
Michie Creek (weir)			131	--	--	--
Canadian Mainstem Yukon River						
Tatchun Creek to Ft. Selkirk	10/15	Good	--	--	7,292	--
Border Passage Estimate ^{A,B}			(22,589) ^{Pre}	--	(48,047) ^{Pre}	--
Total Yukon Territory (observed)			2,331	0	28,113 ⁿ	0
Total Yukon Territory (estimated from tagging) ¹			(16,750) ^{Pre}	--	(46,305) ^{Pre}	--
Yukon River Drainage Totals			23,757	640,977	165,418	28,873

-Continued-

- ^a Estimates are from aerial surveys (peak count) unless otherwise indicated; carcass counts included. Data in parentheses not included in totals or subtotals. Latest revision 26 May 1999.
- ^b Foot survey.
- ^c Cooperative program with BSFA and 4-H Youth.
- ^d Combination foot and aerial survey.
- ^f Population estimate based upon timing of ground surveys at Toklat Springs and streamlife data.
- ^g Estimate made by Division of Sport Fish.
- ^h Boat survey.
- ⁱ Population estimate based upon expanded counting tower observations.
- ^j Population estimate based upon replicate foot surveys and salmon streamlife data.
- ^k Cooperative program with BSFA and Nulato Tribal Council.
- ^m Estimate made by Canadian Department of Fisheries and Oceans.
- ⁿ Total for Alaskan portion of drainage does not include Fishing Branch River. Total for Yukon Territory includes Fishing Branch River.
- ^o Expanded weir count by ADF&G for 7 days weir did not operate due to high water. A total of 55 pink and 7 sockeye salmon were also counted through the weir.
- ^p Population estimate based upon mark and recapture.
- ^{pm} Preliminary data.
- ^q Estimate made by USFWS.
- ^r Estimate made by BLM.
- ^s Canadian "border passage" estimate for Yukon Territory streams (excluding the Fishing Branch River). Canadian harvest has not been removed.
- ^t Canadian "spawning escapement" estimate for Yukon Territory streams (excluding the Fishing Branch River); from DFO tagging study (border passage estimate minus Canadian harvest).
- ^v Estimate made by Tanana Chief Conference.
- ^w Estimate made by Division of Habitat.
- ^x Attempted to operate tower from June 18 - July 21. However, project was unsuccessful due to high water conditions. Above count is for June 13 only.
- ^y Estimate made by USGS, Biological Resource Division.
- ^z Weir operation by Tri-Valley School (Healy, AK). Weir location in upper reach of index area resulted in approximately 20% of index area coverage.
- ^z Count includes fish above and below weir.

Appendix E.3. Estimates of salmon passage on the mainstem Yukon River using 120 kHz sonar equipment at Pilot Station, 1993-1998.

Year	Dates of Operation	Chinook			Summer Chum	Fall Chum	Coho ^a	Other Fish ^b
		Large	Small	Total				
1993 ^c	6/04-8/31	-	-	-	947,000	292,000	42,000	351,000 ^d
1994 ^c	6/04-9/08	-	-	-	1,997,000	-	-	271,000 ^d
1995 ^f	6/07-9/03	203,000	37,000	240,000	3,638,000	1,247,000	155,000	620,000
1996 ^g								
1997 ^f	6/06-8/31	134,000	90,000	224,000	1,411,000	623,000	154,000	273,000
1998 ^f	6/06-9/09	83,000	39,000	122,000	831,000	397,000	176,000	240,000

a Passage estimates for coho salmon are incomplete. The sonar project is terminated prior to the end of the coho salmon run.

b Other fish may include pink salmon (which are substantially more abundant in even-numbered years), whitefish, sheefish, northern pike, and other species. These estimates are not total passage estimates but are merely expanded estimates of the number of fish in the acoustical beam.

c Chart recording traces of fish or debris judged to be travelling downstream, and an associated portion of traces with no discernible direction of travel, were not included in passage estimate calculations.

d Does not include fish passing near shore on the left (south) bank.

f All chart recording traces of fish were assumed to be travelling upstream, and included in passage estimate calculations.

g Operated only for training purposes in 1996.

Appendix E.3. Estimates of salmon passage on the mainstem Yukon River using 120 kHz sonar equipment at Pilot Station, 1993-1998.

Year	Dates of Operation	Chinook			Summer Chum	Fall Chum	Coho ^a	Other Fish ^b
		Large	Small	Total				
1993 ^c	6/04-8/31	-	-	-	947,000	292,000	42,000	351,000 ^d
1994 ^c	6/04-9/08	-	-	-	1,997,000	-	-	271,000 ^d
1995 ^f	6/07-9/03	203,000	37,000	240,000	3,638,000	1,247,000	155,000	620,000
1996 ^g								
1997 ^f	6/06-8/31	134,000	90,000	224,000	1,411,000	623,000	154,000	273,000
1998 ^f	6/06-9/09	83,000	39,000	122,000	831,000	397,000	176,000	240,000

a Passage estimates for coho salmon are incomplete. The sonar project is terminated prior to the end of the coho salmon run.

b Other fish may include pink salmon (which are substantially more abundant in even-numbered years), whitefish, sheefish, northern pike, and other species. These estimates are not total passage estimates but are merely expanded estimates of the number of fish in the acoustical beam.

c Chart recording traces of fish or debris judged to be travelling downstream, and an associated portion of traces with no discernible direction of travel, were not included in passage estimate calculations.

d Does not include fish passing near shore on the left (south) bank.

f All chart recording traces of fish were assumed to be travelling upstream, and included in passage estimate calculations.

g Operated only for training purposes in 1996.

Appendix E.4. Chinook salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1961-1998. ^a

Year	Andreafsky River			Anvik River		Nulato River			Gisasa River		Chena River			Salcha River		
	East Fork		West Fork	River	Index Area	North Fork	South Fork	Mainstem	Aerial	Weir	River	Index Area	River	Index Area		
	Aerial	Tower or Weir	Aerial	Aerial ^b	Aerial ^b	Aerial ^c	Aerial	Tower			Population Estimate ^m	Aerial	Aerial ^d	Population Estimate ^m	Aerial	Aerial
1961	1,003			1,226		376 ^s	167		266 ^s					2,878		
1962	675 ^s		762 ^s											937		
1963													61 ^{sh}			
1964	867		705										137 ^s			
1965			344 ^s	650 ^s										450		
1966	361		303	638										408		
1967			276 ^s	336 ^s										800		
1968	380		383	310 ^s										739		
1969	274 ^s		231 ^s	296 ^s										461 ^s		
1970	665		574 ^s	368										1,882		
1971	1,904		1,682										6 ^s	158 ^s		
1972	798		582 ^s	1,198									193 ^{sh}	1,193	1,034	
1973	825		788	613									138 ^{sh}	391	352	
1974			285	471 ^s		55 ^s	23 ^s		161				21 ^s	1,857	1,620	
1975	993		301	730		123	81		385				1,016 ^h	1,055	950	
1976	818		643	1,053		471	177		332				316 ^h	1,641	1,473	
1977	2,008		1,499	1,371		286	201		255				531	1,202	1,052	
1978	2,487		1,062	1,324		498	422		45 ^s				496	3,499	3,258	
1979	1,180		1,134	1,484		1,093	414		484				563	4,789	4,310	
1980	958 ^s		1,500	1,330	1,192	954 ^s	369 ^s		951				1,726	6,757	6,126	
1981	2,146 ^s		231 ^s	807 ^s	577 ^s		791						1,159 ^s	1,237	1,121	
1982	1,274		851						421				2,541	2,534	2,346	
1983				653 ^s	376 ^s	526	480		572				600 ^s	1,961	1,803	
1984	1,573 ^s		1,993	641 ^s	574 ^s								2,073	1,031	906	
1985	1,617		2,248	1,051	720	1,600	1,180		735				2,553	2,035	1,860	
1986	1,954	1,530 ^k	3,158	1,118	918	1,452	1,522		1,346		9,065		501	3,368	3,031	
1987	1,608	2,011 ^k	3,281	1,174	879	1,145	493		731		2,031		494	1,898	1,671	
1988	1,020	1,339 ^k	1,448	1,805	1,449	1,061	714		797		1,312		1,209	2,761	2,553	
1989	1,399		1,089	442 ^s	212 ^s						3,346		1,760	2,333	2,136	
1990	2,503		1,545	2,347	1,595	568 ^s	430 ^{sh}		884 ^s		2,666		1,185	3,744	3,429	
1991	1,938		2,544	875 ^s	625 ^s	767	1,253		1,690		1,280		1,402	2,212 ^s	1,925	
1992	1,030 ^s		2,002 ^s	1,536	931	348	231		910		5,603		1,277 ^s	1,484 ^s	1,436	
1993	5,855		2,765	1,720	1,526	1,844	1,181		1,573		3,025		799 ^s	10,007 ^k	3,562	
1994	300 ^s	7,801 ^{pr}	213 ^s	913 ^s	843	952	1,795 ^r		2,775	2,888 ^r	12,241 ^k		825 ^s	11,823	11,189	
1995	1,635	5,841 ^p	1,108	1,996	1,147	968	681	1,412	410	4,023	11,877 ^k		799 ^s	18,399 ^k	3,734	
1996		2,955 ^p	624	839	709		100 ⁿ	756		1,952	3,575		2,112	13,643 ^k	4,800	
1997	1,140	3,186 ^p	1,510	3,979	2,690			4,766	144 ^s	3,764	2,233		2,112	4,866	3,457	
1998 ^a	1,027	4,011 ^p	1,249 ^s	709 ^s	648 ^s	507	546	1,536	889 ^s	2,356	6,833		3,303	2,055 ^s	1,923 ^s	
E.O. ^f	>1,500		>1,400	>1,300 ^u	>500 ^u	>800	>500		>600			>1,700			>2,500	

- continued -

Appendix E.4. Chinook salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1961-1998. ^a

Year	Andreafsky River			Anvik River		Nulato River			Gisasa River		Chena River			Salcha River		
	East Fork		West Fork	River	Index Area	North Fork	South Fork	Mainstem	Aerial	Weir	River	Index Area	Population Estimate ^m	River	Index Area	Population Estimate ^m
	Aerial	Tower or Weir	Aerial	Aerial ^b	Aerial ^b	Aerial ^c	Aerial	Tower			Aerial			Aerial		
1961	1,003			1,226		376 ^e	167		266 ^e						2,878	
1962	675 ^a		762 ^a											61 ^{ah}	937	
1963														137 ^a		
1964	867		705												450	
1965			344 ^a	650 ^a											408	
1966	361		303	638											800	
1967			276 ^a	336 ^a												
1968	380		383	310 ^a											739	
1969	274 ^a		231 ^a	296 ^a											461 ^a	
1970	665		574 ^a	368												
1971	1,904		1,682											6 ^a	1,882	
1972	798		582 ^a	1,198										193 ^{ah}	158 ^a	
1973	825		788	613										138 ^{ah}	1,193	1,034
1974			285	471 ^a		55 ^a	23 ^a		161					21 ^a	391	352
1975	993		301	730		123	81		385					1,016 ^h	1,857	1,620
1976	818		643	1,053		471	177		332					316 ^h	1,055	950
1977	2,008		1,499	1,371		286	201		255					531	1,641	1,473
1978	2,487		1,062	1,324		498	422		45 ^a					496	1,202	1,052
1979	1,180		1,134	1,484		1,093	414		484					563	3,499	3,258
1980	958 ^a		1,500	1,330	1,192	954 ^a	369 ^a		951					1,726	4,789	4,310
1981	2,146 ^a		231 ^a	807 ^a	577 ^a		791							1,159 ^a	6,757	6,126
1982	1,274		851											2,541	1,237	1,121
1983				653 ^a	376 ^a	526	480		421					600 ^a	2,534	2,346
1984	1,573 ^a		1,993	641 ^a	574 ^a				572					2,073	1,961	1,803
1985	1,617		2,248	1,051	720	1,600	1,180							2,553	1,031	906
1986	1,954	1,530 ^k	3,158	1,118	918	1,452	1,522		735					501	2,035	1,860
1987	1,608	2,011 ^k	3,281	1,174	879	1,145	493		1,346		9,065			2,553	2,035	1,860
1988	1,020	1,339 ^k	1,448	1,805	1,449	1,061	714		731		6,404			2,031	1,935	3,368
1989	1,399		1,089	442 ^a	212 ^a				797		3,346			1,312	1,209	4,771
1990	2,503		1,545	2,347	1,595	568 ^a	430 ^{ah}				2,666			1,760	4,562	2,553
1991	1,938		2,544	875 ^a	625 ^a	767	1,253		884 ^a		5,603			1,280	3,294	2,333
1992	1,030 ^a		2,002 ^a	1,536	931	348	231		1,690		5,603			1,436	10,728	3,744
1993	5,855		2,765	1,720	1,526	1,844	1,181		910		3,025			1,402	5,608	2,212 ^a
1994	300 ^a	7,801 ^{pf}	213 ^a		913 ^a	843	952	1,795 ^r			5,230			799 ^a	7,862	1,484 ^a
1995	1,635	5,841 ^p	1,108	1,996	1,147	968	681	1,412	1,573	2,775	12,241 ^k			2,660	10,007 ^k	3,636
1996		2,955 ^p	624	839	709		100 ^a	756	2,775	2,888 ^r	11,877 ^k			2,943	18,399 ^k	11,823
1997	1,140	3,186 ^p	1,510	3,979	2,690			4,766	410	4,023	9,680			1,570	13,643 ^k	3,978
1998	1,027	4,011 ^p	1,249 ^a	709 ^a	648 ^a	507	546	1,536		1,952	6,833			3,039	7,958	4,866
									144 ^a	3,764	13,390 ^k			2,233	18,396 ^k	3,457 ^a
									889 ^a	2,356	4,745 ^k			3,495	5,027 ^k	2,055 ^a
											440 ^a			386 ^a		1,923 ^a
E.O. ^f	>1,500		>1,400	>1,300 ^u	>500 ^u	>800	>500		>600			>1,700				>2,500

- continued -

- a Aerial survey counts are peak counts only. Survey rating was fair or good unless otherwise noted.
- b From 1961-1970, river count data are from aerial surveys of various segments of the mainstem Anvik River. From 1972-1979, counting tower operated; mainstem aerial survey counts below the tower were added to tower counts. From 1980-present, aerial survey counts for the river are best available minimal estimates for the entire Anvik River drainage. Index area counts are from the mainstem Anvik River between the Yellow River and McDonald Creek.
- c Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
- d Chena River index area for assessing the escapement objective is from Moose Creek Dam to Middle Fork River.
- f Salcha River index area for assessing the escapement objective is from the TAPS crossing to Caribou Creek.
- g Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
- h Boat survey.
- j Data unavailable for index area. Calculated from historic (1972-91) average ration of index area counts to total river counts (0.90:1.0).
- k Tower counts.
Mark-recapture population estimate.
- n Mainstem counts below the confluence of the North and South Forks Nulato River included in the South Fork counts.
- p Weir counts.
- r Incomplete count because of late installation and/or early removal of project.
- s Data are preliminary.
- t Interim escapement goals. Established March, 1992.
- u Interim escapement goal for the entire Anvik River drainage is 1,300 salmon. Interim escapement objective for mainstem Anvik River between the Yellow River and McDonald Creek is 500 salmon.

Appendix E.5. Chinook salmon escapement counts for selected spawning areas in the Canadian portion of the Yukon River drainage, 1991-1998.

Year	Tincup Creek ^a	Tatchun Creek ^b	Little Salmon River ^a	Big Salmon River ^{a,c}	Nisutlin River ^{a,d}	Ross River ^{a,f}	Wolf River ^{a,g}	Whitehorse Fishway		Canadian Mainstem		
								Count	Percent Hatchery Contribution	Border Passage Estimate	Harvest	Spawning Escapement Estimate
1961								1,068	0			
1962								1,500	0			
1963								483	0			
1964								595	0			
1965								903	0			
1966		7 ^k						563	0			
1967								533	0			
1968			173 ^k	857 ^k	407 ^k	104 ^k		414	0			
1969			120	286	105			334	0			
1970		100		670	615		71 ^k	625	0			
1971		130	275	275	650		750	856	0			
1972		80	126	415	237		13	391	0			
1973		99	27 ^k	75 ^k	36 ^k			224	0			
1974		192		70 ^k	48 ^k			273	0			
1975		175		153 ^k	249		40 ^k	313	0			
1976		52		86 ^k	102			121	0			
1977		150	408	316 ^k	77			277	0			
1978		200	330	524	375			725	0			
1979		150	489 ^k	632	713		183 ^k	1,184	0			
1980		222	286 ^k	1,436	975		377	1,383	0			
1981		133	670	2,411	1,626	949	395	1,555	0			
1982		73	403	758	578	155	104	473	0	36,598	16,808	19,790
1983	100	264	101 ^k	540	701	43 ^{kn}	95	905	0	47,741	18,752	28,989
1984	150	153	434	1,044	832	151 ^k	124	1,042	0	43,911	16,295	27,616
1985	210	190	255	801	409	23 ^k	110	508	0	29,881	19,151	10,730
1986	228	155	54 ^k	745	459 ^k	72 ^k	109	557	0	36,479	20,064	16,415
1987	100	159	468	891	183	180 ^k	35	327	0	30,823	17,563	13,260
1988	204	152	368	765	267	242	66	405	16	44,445	21,327	23,118
1989	88	100	862	1,662	695	433 ^p	146	549	19	42,620	17,419	25,201
1990	83	643	665	1,806	652	457 ^k	188	1,407	24	56,679	18,980	37,699
1991			326	1,040		250	201 ^r	1,266 ^h	51 ^h	41,187	20,444	20,743
1992	73	106	494	617	241	423	110 ^r	758 ^h	84 ^h	43,185	17,803	25,382
1993		183	184	572	339	400	168 ^r	668 ^h	73 ^h	45,027	16,469	28,558
1994	101 ^k	477	726	1,764	389	506	393 ^r	1,577 ^h	54 ^h	46,680	20,790	25,890
1995	121	397	781	1,314	274	253 ^k	229 ^r	2,103	57	52,353	20,091	32,262
1996	150	423	1,150	2,565	719	102 ^k	705 ^r	2,958	35 ^h	47,955	19,546	28,409
1997	193	266 ^k	1,025	1,345	277		322 ^r	2,084	24	53,400	15,717	37,683
1998 ^s	53	189 [*]	361	523	146		66	777	95 ^h	22,588	5,838	16,750
E.O.											33,000-43,000	

- continued -

- a Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Survey rating is fair to good, unless otherwise noted.
- b All foot surveys except 1978 (boat survey) and 1986 (aerial survey).
- c For 1968, 1970, and 1971 counts are from mainstem Big Salmon River. For all other years counts are from the mainstem Big Salmon River between Big Salmon Lake and the vicinity of Souch Creek.
- d One Hundred Mile Creek to Sidney Creek.
- f Big Timber Creek to Lewis Lake.
- g Wolf Lake to Red River.
- h Counts and estimated percentages may be slightly exaggerated. In some or all of these years a number of adipose-clipped fish ascended the fishway, and were counted, more than once. These fish would have been released into the fishway as fry between 1989 and 1994, inclusive.
- j Estimated total spawning escapement excluding Porcupine River (estimated border escapement minus the Canadian catch).
- k Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
Estimate derived by dividing the annual 5-area (Whitehorse Fishway, Big Salmon, Nisutlin, Wolf, Tatchun) count by the average proportion of the annual 5-area index count to the estimated spawning escapement from the DFO tagging study for years 1983, and 1985-1989.
- n Information on area surveyed is unavailable.
- p Counts are for Big Timber Creek to Sheldon Lake.
- q Interim escapement objective. Stabilization escapement objective for years 1990-1995 is 18,000 salmon. Rebuilding step escapement objective for years 1996-2001 is 28,000 salmon.
- r Counts are for Wolf Lake to Fish Lake outlet.
- s Data are preliminary.

Appendix E.6. Summer chum salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1973-1998. ^a

Year	Andreafsky River			Anvik River		Rodo River	Kaltag Creek	Nulato River			Gisasa River		Hogatza River		Tozitna River	Chena River		Salcha River		
	East Fork		West Fork	Tower & Aerial ^b	Sonar	Aerial	Tower	Aerial	Aerial	Tower	Aerial	Weir	Aerial	Tower	Aerial	Aerial	Tower	Aerial	Tower	
	Aerial	Weir	Counts																	Aerial
1973	10,149 ^d			51,835	249,015												79 ^d		290	
1974	3,215 ^d			33,578	411,133		16,137		29,016	29,334		22,022			1,823	4,349		3,510		
1975	223,485			235,954	900,967		25,335		51,215	87,280		56,904		22,355	3,512	1,670		7,573		
1976	105,347			118,420	511,475		38,258		9,230 ^d	30,771		21,342		20,744	725 ^d	685		6,484		
1977	112,722			63,120	358,771		16,118		11,385	58,275		2,204 ^d		10,734	761 ^d	610		677 ^d		
1978	127,050			57,321	307,270		17,845		12,821	41,659		9,280 ^d		5,102	2,262	1,609		5,405		
1979	66,471			43,391		280,537			1,506	35,598		10,962		14,221		1,025 ^d		3,060		
1980	36,823 ^d			114,759		492,676			3,702 ^d	11,244 ^d		10,388		19,786	580	338		4,140		
1981	81,555	147,312 ^f				1,486,182			14,348							3,500		8,500		
1982	7,501 ^d	181,352 ^f	7,267 ^d			444,581						334 ^d		4,984 ^d	874	1,509		3,756		
1983		110,608 ^f				362,912			1,263 ^d	19,749		2,356 ^d		28,141	1,604	1,097		716 ^d		
1984	95,200 ^d	70,125 ^f	238,565			891,028								184 ^d		1,861		9,810		
1985	66,146			52,750		1,080,243	24,576		10,494	19,344		13,232		22,566	1,030	1,005		3,178		
1986	83,931	167,614 ^g	99,373			1,189,602			16,848	47,417		12,114			1,778	1,509		8,028		
1987	6,687 ^d	45,221 ^g	35,535			455,876			4,094	7,163		2,123		5,669 ^d		333		3,657		
1988	43,056	68,937 ^g	45,432			1,125,449	13,872		15,132	26,951		9,284		6,890	2,983	432		2,889 ^d		
1989	21,460 ^d					636,906										714 ^d		1,574 ^d		
1990	11,519 ^d			20,426 ^d		403,627	1,941 ^d		3,196 ^{dh}	1,419 ^d		450 ^d		2,177 ^d	36	245 ^d		450 ^d		
1991	31,886			46,657		847,772	3,977		13,150	12,491		7,003		9,947	93	115 ^d		154 ^d		
1992	11,308 ^d			37,808 ^d		775,626	4,465		5,322	12,358		9,300		2,986	794	848 ^d		3,222		
1993	10,935 ^d			9,111 ^d		517,409	7,867		5,486	7,698		1,581			970	168	5,400	212	5,809	
1994		200,981 ^{j,k}				1,124,689		47,295			148,762 ^k	6,827	51,116 ^k	8,247 ^m		1,137	9,984	4,916	39,450	
1995		172,148 ^j				1,339,418	12,849	77,193	10,875	29,949	236,890	6,458	136,886		116,735	4,985	185 ^d	3,519 ^k	934 ^d	
1996		108,450 ^j				933,240	4,380	51,269	8,490 ^{dh}		129,694		157,589	27,090 ^m	100,912	2,310	2,061	12,810 ^k	9,722	
1997		51,139 ^j				609,118	2,775 ^d	48,018			157,975	686 ^d	31,802	1,821 ^d	76,454	428 ^d	594 ^d	9,439 ^k	3,968 ^d	
1998 ^q		67,591 ^j				471,865		8,113			49,140		18,228	120 ^{d,r}	212 ^k	7 ^d	24 ^d	5,901	370 ^d	
E.O. ⁿ	>109,000		>116,000		>500,000			>53,000 ^o					>17,000 ^p				>3,500			

- continued -

- a Aerial survey counts are peak counts only, survey rating is fair or good unless otherwise noted.
- b From 1972-1979 counting tower operated; escapement estimate listed is the tower counts plus expanded aerial survey counts below the tower (see Buklis 1982).
- c Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
- d Incomplete survey and/or poor survey timing or conditions resulted in minimal or inaccurate count.
- f Sonar count.
- g Tower count.
- h Mainstem counts below the confluence of the North and South Forks of the Nulato River included in the South Fork counts.
- j Weir count.
- k Incomplete count due to late installation and/or early removal of project or high water events.
BLM helicopter survey.
- n Interim escapement objective.
- o Interim escapement objective for North Fork Nulato River only.
- p Consists of Clear and Caribou Creeks interim escapement objectives of 9,000 and 8,000, respectively.
- q Data are preliminary.
- r Consists of Clear Creek only.

Appendix E.7. Fall chum salmon escapement counts for selected spawning areas in Alaskan and Canadian portions of the Yukon River drainage, 1971-1998.

Year	Alaska				Canada							Canadian Mainstem		
	Toklat River ^b	Delta River ^c	Chandalar River ^d	Sheenjek River ^d	Fishing Branch River ^{f,g}	Mainstem Yukon River Index ^{g,h}	Koidern River ^h	Kluane River ^{h,j}	Teslin River ^{h,k}	Border	Harvest	Spawning		
										Passage Estimate		Escapement Estimate		
1971					312,800									
1972		5,384			35,125 ⁿ			198 ^{p,r}						
1973		10,469			15,989 ^s	383		2,500						
1974	41,798	5,915		89,966 ^t	32,525 ^s			400						
1975	92,265	3,734 ^v		173,371 ^t	353,282 ^s	7,671		362 ^r						
1976	52,891	6,312 ^v		26,354 ^t	36,584			20						
1977	34,887	16,876 ^v		45,544 ^t	88,400			3,555						
1978	37,001	11,136		32,449 ^t	40,800			0 ^r						
1979	158,336	8,355		91,372 ^t	119,898			4,640 ^r						
1980 ^{ah}	26,346	5,137		28,933 ^t	55,268			3,150		39,130	16,218	22,912		
1981	15,623	23,508		74,560	57,386 ^w			25,806		66,347	19,281	47,066		
1982	3,624	4,235		31,421	15,901	1,020 ^x		5,378		47,049	15,091	31,958		
1983	21,869	7,705		49,392	27,200	7,560		8,578 ^r		118,365	27,490	90,875		
1984	16,758	12,411		27,130	15,150	2,800 ^y	1,300	7,200	200	81,900	25,267	56,633 ^z		
1985	22,750	17,276 ^v		152,768	56,016 ^s	10,760	1,195	7,538	356	99,775	37,765	62,010		
1986	17,976	6,703 ^v	59,313	84,207 ^{aa}	31,723 ^s	825	14	16,686	213	101,826	13,886	87,940		
1987	22,117	21,180	52,416	153,267 ^{aa}	48,956 ^s	6,115	50	12,000		125,121	44,345	80,776		
1988	13,436	18,024	33,619	45,206 ^{aa}	23,597 ^s	1,550	0	6,950	140	69,280	32,494	36,786		
1989	30,421	21,342 ^v	69,161	99,116 ^{aa}	43,834 ^s	5,320	40	3,050	210 ^p	55,861	20,111	35,750		
1990	34,739	8,992 ^v	78,631	77,750 ^{aa}	35,000 ^{ab}	3,651	1	4,683	739	82,947	31,212	51,735		
1991	13,347	32,905 ^v		86,496 ^{ac}	37,733 ^s	2,426	53	11,675	468	112,303	33,842	78,461		
1992	14,070	8,893 ^v		78,808 ^{ac}	22,517 ^s	4,438	4	3,339	450	67,962	18,880	49,082		
1993	27,838	19,857		42,922 ^{ac}	28,707 ^s	2,620	0	4,610	555	42,165	12,422	29,743		
1994	76,057	23,777 ^v		153,000 ^{ac,ad}	65,247 ^s	1,429 ^p	20 ^p	10,734	209 ^p	133,712	35,354	98,358		
1995	54,513 ^{ah}	20,587	280,999	235,000 ^{ac,ad}	51,971 ^{s,aj}	4,701	0	16,456	633	198,203	40,111	158,092		
1996	18,264	19,758	208,170	247,965 ^{ac,ad}	77,278 ^s	4,977		14,431	315	143,758	21,329	122,429		
1997	14,511	8,000	199,874	80,423	26,959	2,189		3,350	207	94,725	9,286	85,439		
1998 ^{ad}	15,605	5,703	75,811	33,000	11,912	7,292		7,337	236	48,047		46,305		
E.O. ^{af}	>33,000	>11,000		>64,000	50,000- 120,000							>80,000		

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- a Latest table revision May 14, 1998.
Expanded total abundance estimates for upper Toklat River index area using stream life curve (SLC) developed with 1987-1993 data. Index area includes
 - b Geiger Creek, Sushana River, and mainstem floodplain sloughs from approximately 0.25 mile upstream of roadhouse to approximately 1.25 miles
 - c Estimates are a total spawner abundance, generally from using spawner abundance curves and streamlife data.
 - d Side-scan sonar estimate 1986-1990, split beam sonar estimate 1995-1996.
Located within the Canadian portion of the Porcupine River drainage. Total escapement estimated using weir to aerial survey expansion factor of 2.72,
 - f unless otherwise indicated.
 - g Aerial survey count unless otherwise indicated.
 - h Tatchun Creek to Fort Selkirk.
 - j Duke River to end of spawning sloughs below Swede Johnston Creek.
 - k Boswell Creek area (5 km below to 5 km above confluence).
 - m Excludes Fishing Branch River escapement (estimated border passage minus Canadian removal).
Weir installed on September 22. Estimate consists of a weir count of 17,190 after September 22, and a tagging passage estimate of 17,935 prior to weir
 - n installation.
 - p Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
 - r Foot survey.
 - s Weir count.
 - t Total escapement estimate using sonar to aerial survey expansion factor of 2.22.
 - v Population estimate from replicate foot surveys and stream life data.
 - w Initial aerial survey count was doubled before applying the weir/aerial expansion factor of 2.72 since only half of the spawning area was surveyed.
 - x Boat survey.
 - y Total index area not surveyed. Survey included the mainstem Yukon River between Yukon Crossing to 30 km below Fort Selkirk.
 - z Escapement estimate based on mark-recapture program unavailable. Estimate based on assumed average exploitation rate.
 - aa Expanded estimates for period approximating second week August through middle fourth week September, using Chandalar River run timing data.
 - ab Weir was not operated. Although only 7,541 chum salmon were counted on a single survey flown October 26, a population estimate of approximately 27,000 fish was made through date of survey, based upon historic average aerial-to-weir expansion of 28%. Actual population of spawners was reported by DFO as between 30,000-40,000 fish considering aerial survey timing.
 - ac Total abundance estimate are for the period approximating second week August through middle fourth week of September. Comparative escapement estimates prior to 1986 are considered more conservative; approximating the period of end of August through middle week of September.
 - ad Data are preliminary.
 - af Interim escapement objective.
 - ag Based on escapement estimates for years 1974-1990.
 - ah Minimal estimate because of late timing of ground surveys with respect to peak of spawning.
 - aj Incomplete count due to late installation and/or early removal of project or high water events.

Appendix E.8. Yukon River fall chum salmon estimated brood year production and return per spawner estimates, 1974-1998.

Year	(P)			Estimated Brood Year Return								(R)	(R/P)
	Estimated Annual Totals			Number of Salmon ^a				Percent				Total Brood Year Return ^a	Return/Spawner
	Escapement	Catch	Return	Age 3	Age 4	Age 5	Age 6	Age 3	Age 4	Age 5	Age 6		
1974	340,408	395,198	735,606	69,059	384,993	67,468	0	0.132	0.738	0.129	0.000	521,520	1.53
1975	1,245,304	382,200	1,627,504	116,367	1,203,589	58,797	0	0.084	0.873	0.043	0.000	1,378,754	1.11
1976	244,282	233,917	478,199	100,242	562,568	113,155	3,820	0.129	0.721	0.145	0.005	779,785	3.19
1977	371,414	353,236	724,650	98,307	887,805	153,523	3,539	0.086	0.777	0.134	0.003	1,143,175	3.08
1978	242,772	340,816	583,588	18,349	290,316	76,537	0	0.048	0.754	0.199	0.000	385,202	1.59
1979	755,922	615,377	1,371,299	35,927	650,193	223,198	3,343	0.039	0.712	0.245	0.004	912,662	1.21
1980	231,368	488,305	719,673	7,079	294,711	179,420	2,037	0.015	0.610	0.371	0.004	483,247	2.09
1981	342,154	677,257	1,019,411	37,311	820,612	240,238	8,615	0.034	0.741	0.217	0.008	1,106,775	3.23
1982	110,362	373,175	483,537	9,726	345,465	141,431	1,384	0.020	0.694	0.284	0.003	498,007	4.51
1983	212,332	525,016	737,348	10,846	742,423	182,300	1,954	0.012	0.792	0.194	0.002	937,524	4.42
1984	142,898	412,322	555,220	6,013	332,870	154,201	7,957	0.012	0.664	0.308	0.016	501,040	3.51
1985	497,620	515,481	1,013,101	38,044	774,355	248,980	2,731	0.036	0.728	0.234	0.003	1,064,110	2.14
1986	281,218	318,028	599,246	0	394,853	279,127	4,093	0.000	0.582	0.412	0.006	678,074	2.41
1987	491,040	406,365	897,405	11,405	467,735	244,256	5,868	0.016	0.641	0.335	0.008	729,263	1.49
1988	200,526	353,242	553,768	31,057	147,205	113,206	9,342	0.103	0.489	0.376	0.031	300,811	1.50
1989	389,426	541,177	930,603	2,305	210,193	295,980	16,238	0.004	0.401	0.564	0.031	524,716	1.35
1990	312,962	350,100	663,062	527	496,924	337,333	28,342	0.001	0.576	0.391	0.033	863,127	2.76
1991	341,242	439,096	780,338	3,141	826,146	327,781	12,367	0.003	0.706	0.280	0.011	1,169,435	3.43
1992	248,576	148,846	397,422	5,452	606,642	203,551	4,905	0.007	0.739	0.248	0.006	820,551	3.30
1993	238,648	91,015	329,663	7,765	455,489	123,769		0.013	0.776	0.211		587,023 ^d	>2.46
1994	636,162	169,225	805,387	4,393	273,402							277,794 ^e	>0.44
1995	724,142	461,147	1,185,289	2,878									
1996	726,600	244,027	970,627										
1997	506,025	169,775	675,800										
1998	320,499	84,901	405,400										
Average	409,725	375,181	784,906										
368,517	All Brood Years (1974-92)			31,640	549,453	191,604	6,134	0.0410	0.6810	0.2689	0.0091	778,830	2.52
235,537	Even Brood Years (1974-92)			24,750	385,655	166,543	6,188	0.0465	0.6568	0.2863	0.0104	583,136	2.57
516,273	Odd Brood Years (1974-92)			39,295	731,450	219,450	6,073	0.0348	0.7079	0.2496	0.0076	996,268	2.38

^a The estimated number of salmon which returned are based upon annual age composition observed in lower Yukon test nets each year, weighted by test fish CPUE.

^b Based upon expanded test fish age composition estimates in 1994, the year in which the test fishery terminated early.

^d Brood year return includes only 3, 4, and 5 year fish, indicating that production (R/P) from brood year 1993 was at least 2.46.

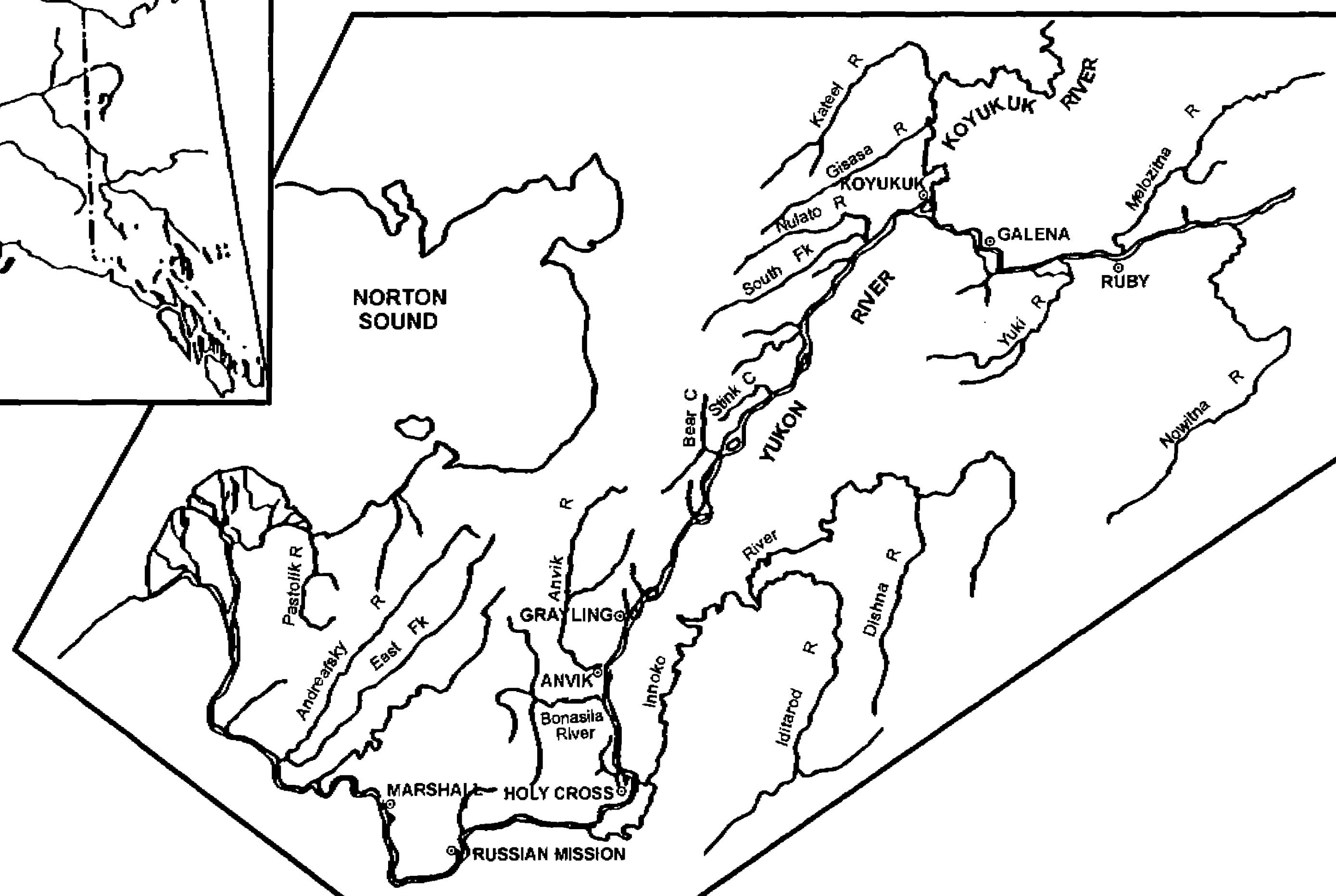
^e Brood year return includes only 3 and 4 year fish, indicating that production (R/P) from brood year 1994 was at least 0.44.

Appendix E.9. Coho salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1972-1998. ^a

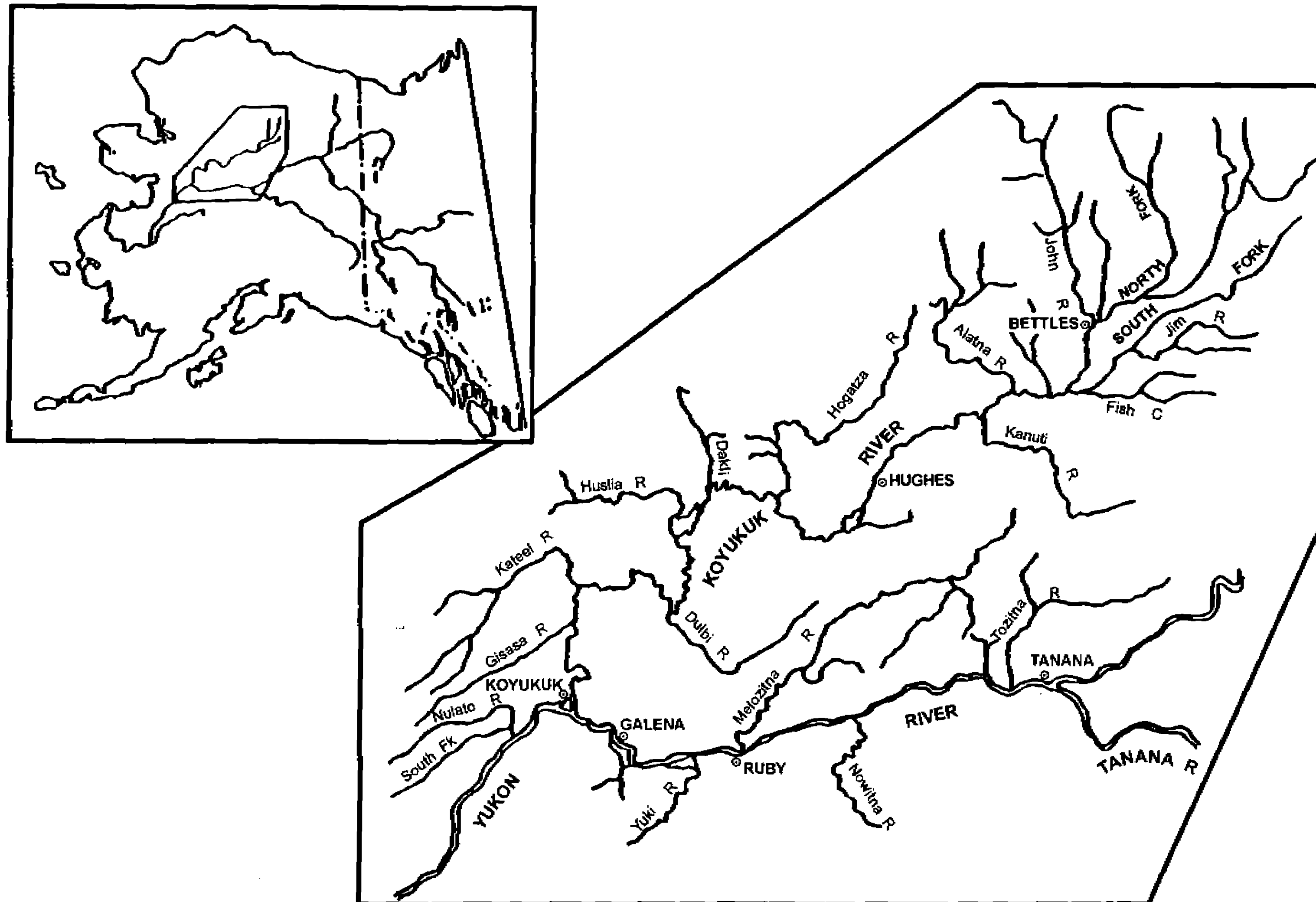
Year	Andreafsky River			Kantishna River		Nenana River				Delta Clearwater River ^{f,g}	Clearwater Lake and Outlet	Richardson Clearwater River
	East Fork	West Fork	Anvik River	Geiger Creek ^b	Barton Creek	Lost Slough	Nenana Mainstem ^c	Wood Creek ^d	Seventeen Slough			
1972										630	417	454 ^k
1973										3,322	551 ^f	375 ^f
1974						1,388			27	3,954 ^j	560	652 ^f
1975						943			956	5,100	1,575 ^{f, h}	4 ^k
1976			467 ^k	25 ^j		118			281	1,920	1,500 ^{f, h}	80 ^k
1977			81 ^k	60		524 ^k		310 ^b	1,167	4,793	730 ^{f, h}	327
1978						350		300 ^b	466	4,798	570 ^{f, h}	
1979						227			1,987	8,970	1,015 ^{f, h}	372
1980				3 ^j		499 ^k		1,603 ^b	592	3,946	1,545 ^{f, h}	611
1981	1,657 ^k					274		849 ^{n,r}	1,005	8,563 ^p	459 ^k	550
1982				81				1,436 ^{n,r}		8,365 ^p		
1983				42		766		1,042 ⁿ	103	8,019 ^p	253	88
1984				20 ^j		2,677		8,826 ⁿ		11,061	1,368	428
1985				42 ^j		1,584		4,470 ⁿ	2,081	5,358	750	
1986				5	496	794		1,664 ⁿ	218 ^{d,h}	10,857	3,577	146 ^k
1987				1,175		2,511		2,387 ⁿ	3,802	22,300	4,225 ^{f, h}	
1988	1,913	830	1,203	159	437	348		2,046 ⁿ		21,600	825 ^{f, h}	
1989				155	12 ^k			412 ⁿ	824 ^k	11,000	1,600 ^{f, h}	483
1990				211		688	1,308		15 ^k	8,325	2,375 ^{f, h}	
1991				427	467 ^k	564	447		52	23,900	3,150 ^{f, h}	
1992				77	55 ^k	372			490	3,963	229 ^{f, h}	500 ^f
1993				138	141	484	419	666 ^{n,s}	581	10,875	3,525 ^{f, h}	
1994				410	2,000 ^{n,s}	944	1,648	1,317 ^{n,s}	2,909	62,675 ^w	3,425 ^{f, h}	5,800 ^f
1995	10,901 ⁿ			142	192 ^{n,s}	4,169	2,218	500 ⁿ	2,972 ^k	20,100	3,625 ^{f, h}	
1996	8,037 ⁿ			233	0 ⁿ	2,040	2,171	2,416 ^j	3,668 ^{d,h}	14,075 ^x	1,125 ^{f, y}	
1997	9,462 ⁿ			274		1,524 ^{aa}	1,446	1,464 ^{j,ab}	1,996 ^{d,h}	11,525	2,775 ^{f, h}	
1998 ^t	5,417 ⁿ			157		1,360	2,771		1,413 ^{b,h}	11,100	2,775 ^{f, h}	
E.O.										>9,000 ^u		

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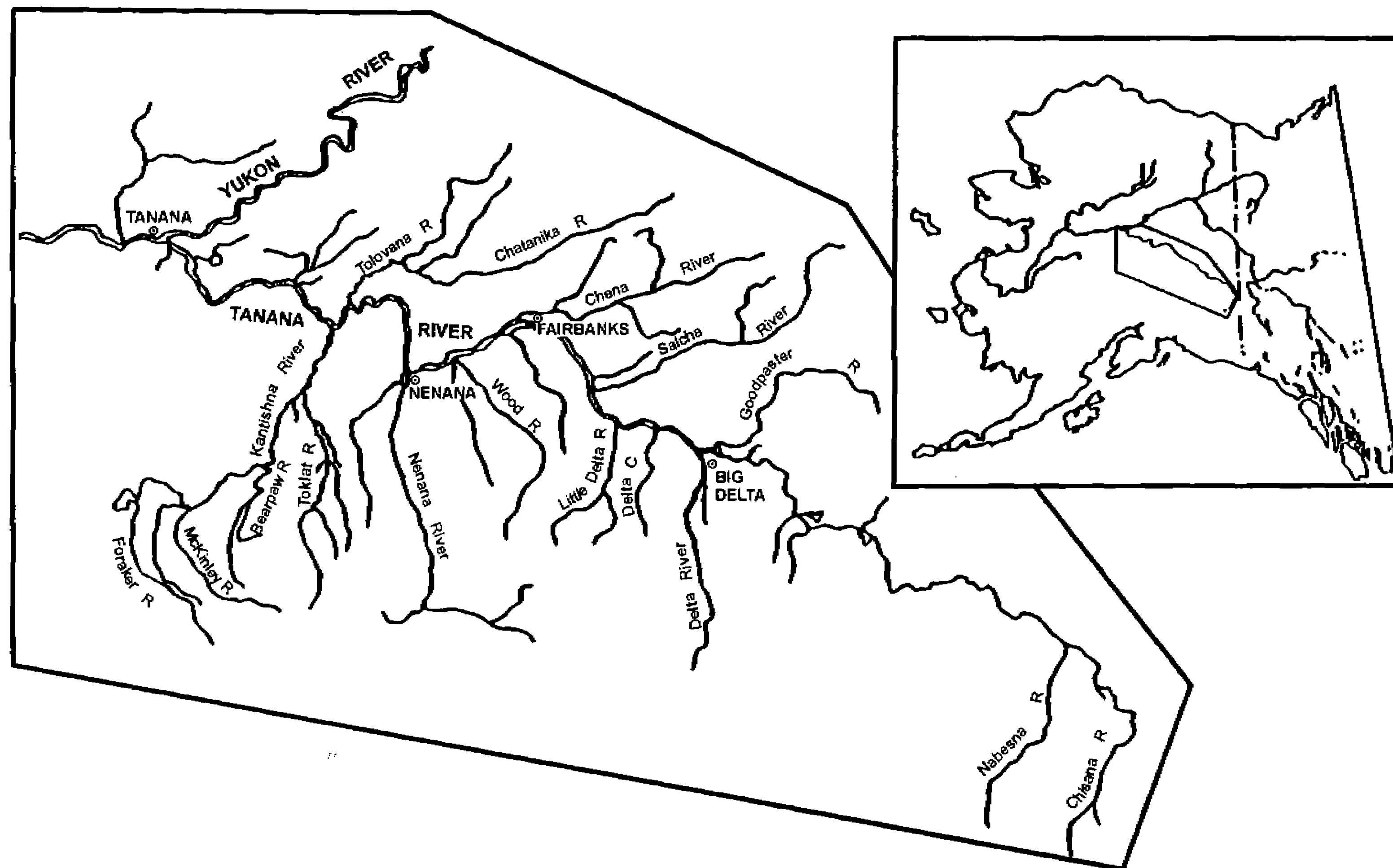
- a Aerial surveys unless otherwise noted. Only peak counts presented. Survey rating is fair to good, unless otherwise noted.
- b Foot survey.
- c Mainstem Nenana River between confluences of Lost Slough and Teklanika River.
- d Surveyed by F.R.E.D.
- f Surveyed by Sport Fish division.
- g Boat survey counts in the lower 17.5 river miles, unless otherwise indicated.
- h Boat survey.
- k Poor survey.
- n Weir count.
- p Expanded estimate based on partial survey counts and historic distribution of spawners from 1977-1980.
- r Coho weir was operated at the mouth of Clear Creek (Shores Landing).
- s Incomplete count because of late installation and/or early removal of project.
- t Data are preliminary.
- u Interim escapement objective established March, 1993, based on boat survey counts of coho salmon in the lower 17.5 river miles during the period October 21-27.
- w An additional 17,565 coho salmon were counted by helicopter in the Delta Clearwater outside of the normal mainstem index area.
- x An additional 3,300 coho salmon were counted by helicopter in the Delta Clearwater outside of the normal mainstem index area.
- y An additional 350 coho salmon were counted in Clearwater Lake Inlet.
- aa Survey of western floodplain sloughs only.
- ab Beginning at confluence of Clear Creek, the survey includes counts of Glacier and Wood Creeks up to their headwaters.



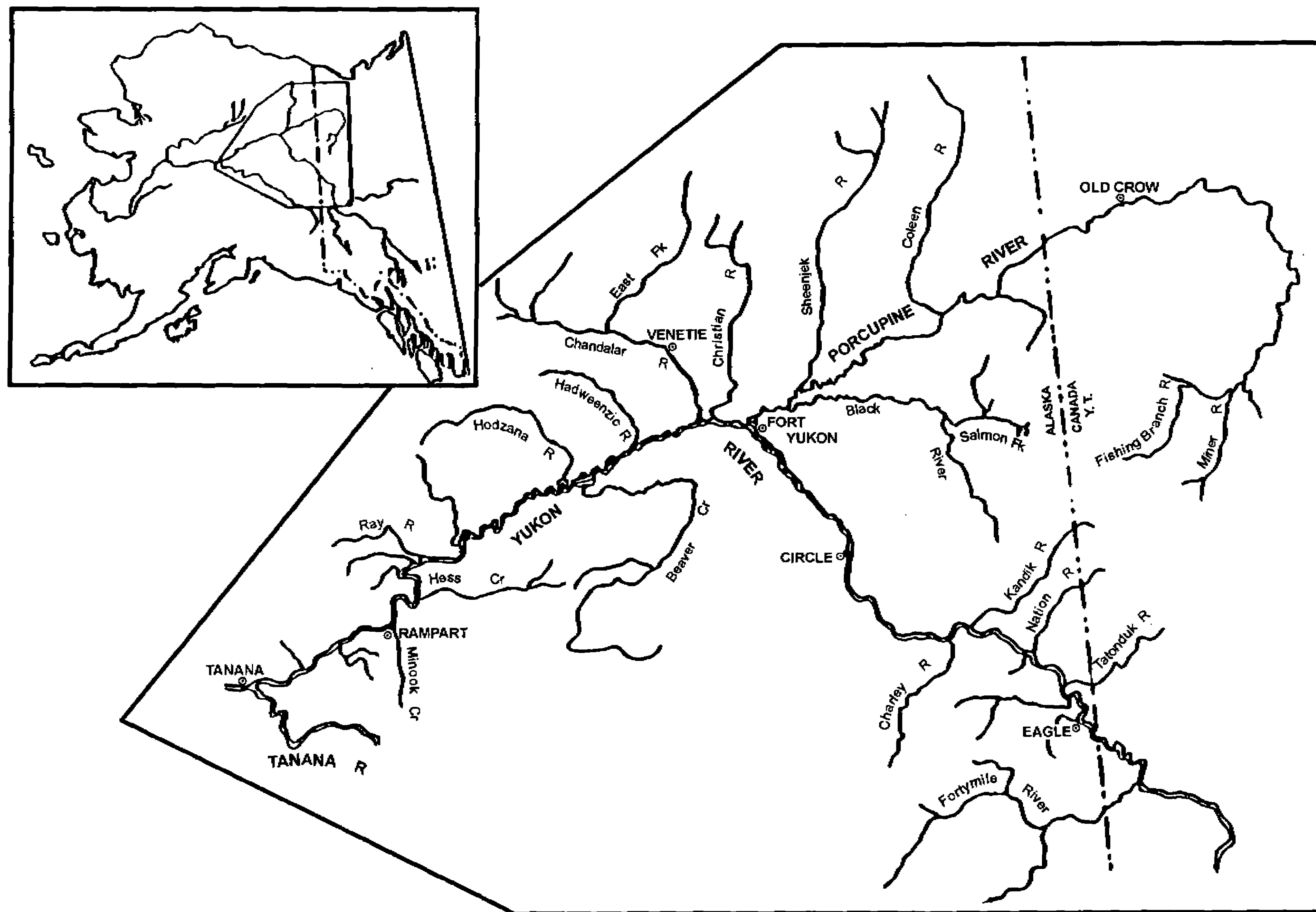
Appendix E.10. The lower Yukon River drainage.



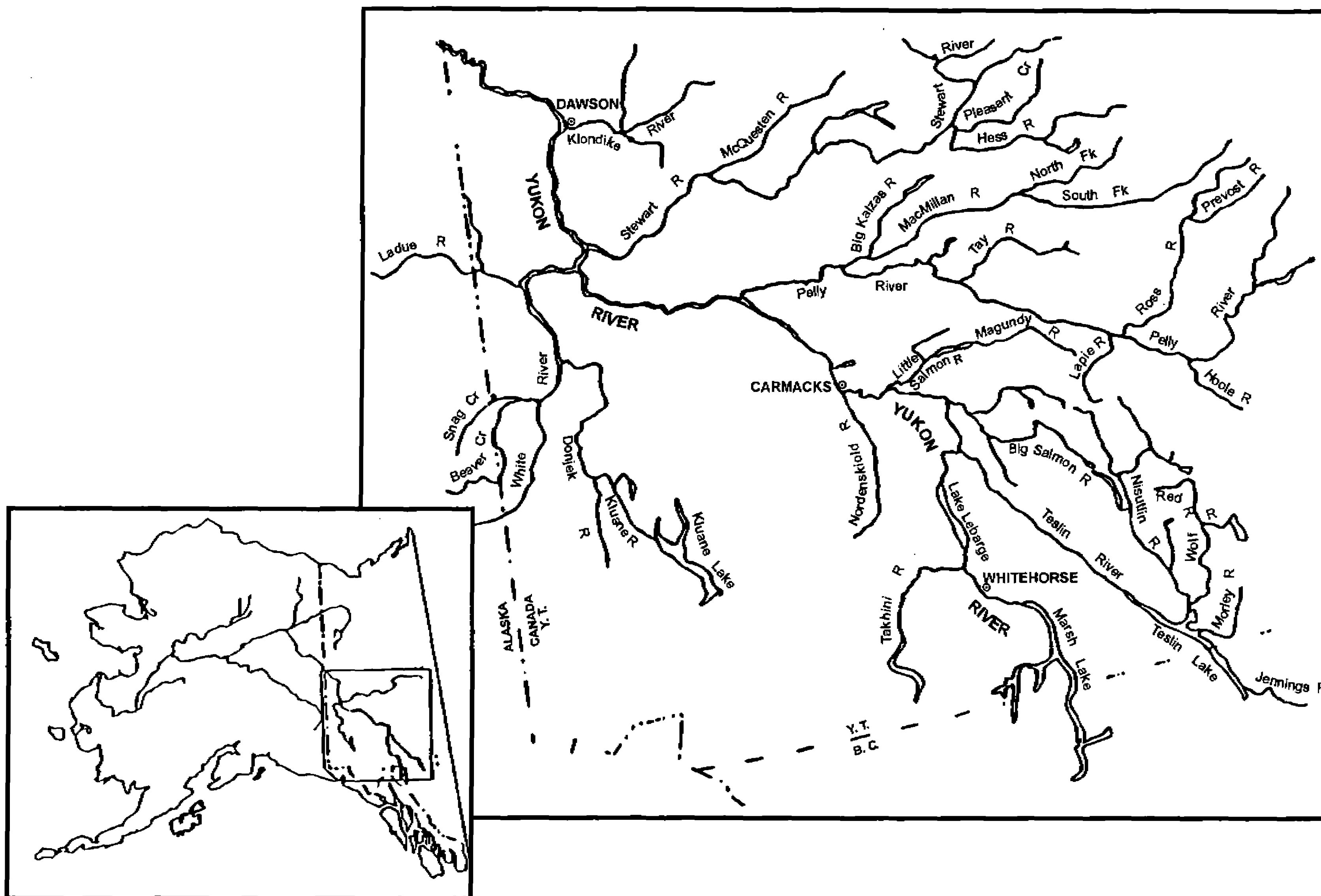
Appendix E.11. The Koyukuk River drainage.



Appendix E.12. The Tanana River drainage.



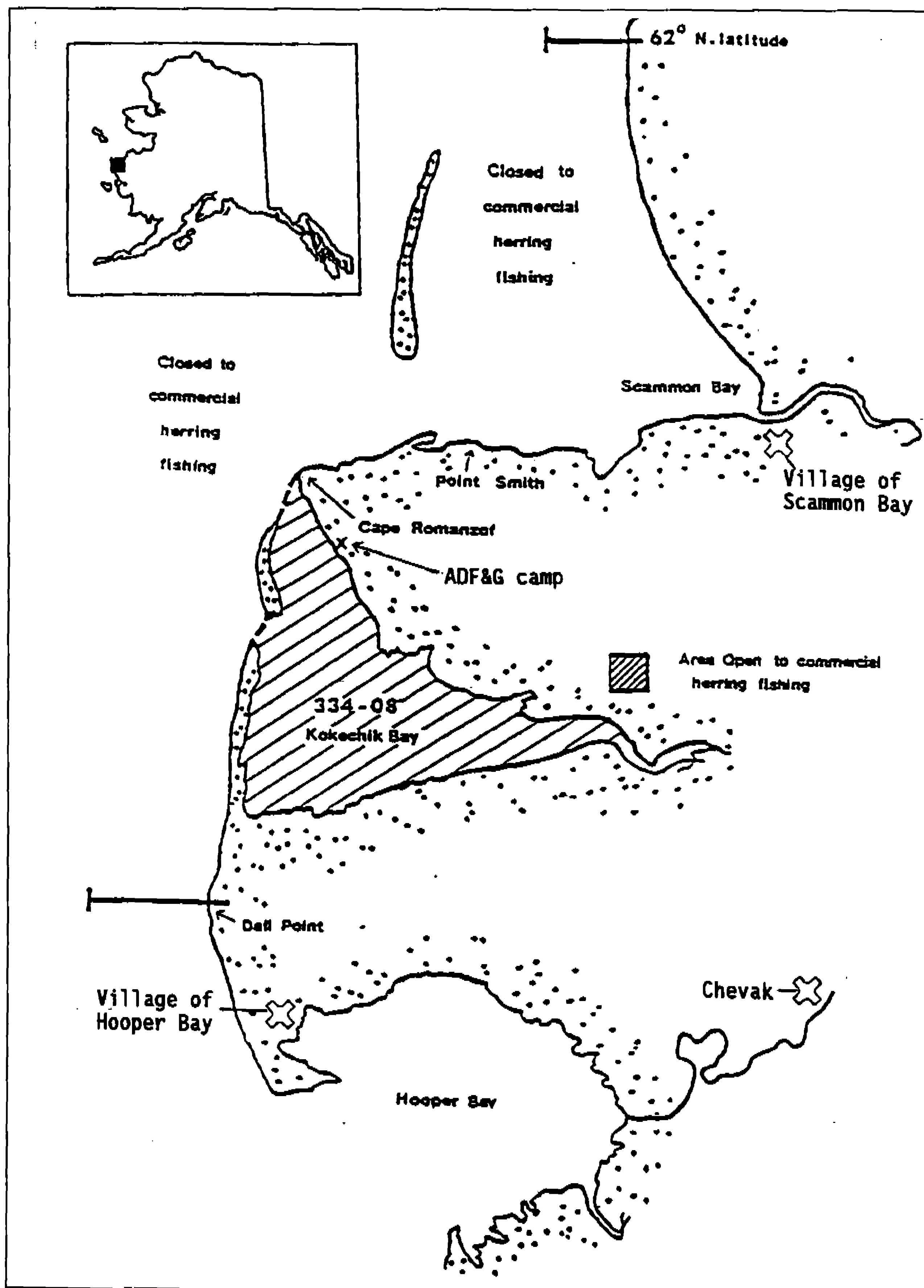
Appendix E.13. The middle Yukon River and Porcupine River drainage.



Appendix E.14. The upper Yukon River drainage.

APPENDIX F

CAPE ROMANZOF HERRING DISTRICT FISHERY



Appendix F.1. Map of Cape Romanzof Herring District.

Appendix F.2. Commercial herring harvest and effort data by fishing period, Cape Romanzof District, 1998.

Period	Date	Time of Fishery	Number				Harvest (st)					
			Hours Fished	Fishermen	Vessels	Landings	Bait	Roe %	Sac Roe	Sac Roe %	Total	Roe %
1	20-May	2200-2330	1.5	8	8	10	3.5	6.69	15.4	9.55	18.9	9.02
2	21-May	2230-0030	2.0	17	17	23	3.8	6.98	18.6	9.79	22.4	9.32
3	22-May	2230-0130	3.0	27	26	42	7.9	7.23	39.1	9.87	47.0	9.43
4	23-May	1100-1300	2.0	28	27	28	0.9	6.76	8.6	10.49	9.5	10.14
5	23-May	2230-0130	3.0	34	34	54	2.6	7.03	52.4	9.98	55.0	9.84
6	24-May	2130-0230	5.0	35	34	75	19.9	7.15	88.7	9.82	108.5	9.33
7	25-May	1230-1430	2.0	30	30	41	17.8	7.19	40.9	9.64	58.7	8.90
8	25-May	2330-0400	4.5	28	28	85	24.6	7.26	113.7	10.32	138.3	9.77
9	26-May	2300-0400	5.0	35	34	104	14.1	7.31	163.2	10.23	177.3	10.00
10	28-May	0100-0400	3.0	24	24	48	13.2	6.94	51.6	10.07	64.8	9.43
11	29-May	0100-0500	4.0	17	17	24	1.3	7.00	25.0	9.62	26.4	9.49
Total			35.0	41	41	534	109.6	7.15	617.2	10.04	726.8	9.61

Appendix F.3. List of Lower Yukon Area emergency orders pertaining to the Cape Romanzof Herring District, 1998.

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-LY-H-01-98	May 20, 1998	Established a 1.5-hour commercial herring fishing period beginning 10:00 p.m. Wednesday, May 20, 1998 until 11:30 p.m. Wednesday, May 20, 1998. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Test fishing crew began catching herring on May 18. The first spawn was documented on May 18. Test samples taken on May 20 indicated a majority of herring were ripe. Estimated roe recovery ranged from 8.0% to 15.8% and averaged 10.7% for 3 1/4 inch mesh gillnet samples. The preseason harvest projection was 650 to 850 short tons. Due to the efficiency of the fishing fleet, small size of vessels and short fishing time, it was warranted to restrict gear to no more than 50 fathoms and one gillnet per vessel.
3-LY-H-02-98	May 21, 1998	Established a 2-hour commercial herring fishing period beginning 10:30 p.m. Thursday, May 21 until 12:30 a.m. Friday, May 22. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Test samples taken on May 21 indicated a majority of herring were ripe. Estimated roe recovery ranged from 9.5% to 16.1% and averaged 12.4% for 3 1/4 inch mesh gillnet samples. A total of 18.8 tons of sac roe herring with 9.0% roe were harvested during the first commercial fishing period on May 20.
3-LY-H-03-98	May 22, 1998	Established a 3-hour commercial herring fishing period beginning 10:30 p.m. Friday, May 22 until 1:30 a.m. Saturday, May 23. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Herring samples obtained by commercial fishermen indicated a majority of the fish were ripe with roe recovery ranging from 7.3% to 13.2% and averaged 11.2% for 3 inch mesh gillnet samples. Approximately 22.4 tons of herring with an average of 9.5% roe was harvested during the last commercial fishing period. The cumulative harvest was 41.2 tons of sac roe herring with 9.3% roe recovery.
3-LY-H-04-98	May 23, 1998	Established a 2-hour commercial herring fishing period beginning 11:00 a.m. Saturday, May 23 until 1:00 p.m. Saturday, May 23. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Herring samples obtained by commercial fishermen indicated a majority of the fish were ripe with roe recovery ranging from 10.0% to 12.0% and averaged 11.0% for 3 inch mesh gillnet samples. Approximately 47.0 tons of herring with an average of 9.3% roe was harvested during the last commercial fishing period. The cumulative harvest was 88.2 tons of herring with 9.3% roe recovery.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-LY-H-05-98	May 23, 1998	Established a 3-hour commercial herring fishing period beginning 10:30 p.m. Saturday, May 23 until 1:30 a.m. Sunday, May 24. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Herring samples obtained earlier in the day by commercial fishermen indicated a majority of the fish were ripe with roe recovery ranging from 10.0% to 12.0% and averaged 11.0% for 3 inch mesh gillnet samples. Approximately 9.5 tons of herring with an average of 10.1% roe was harvested during the fourth commercial fishing period earlier on May 23. The cumulative harvest was 97.7 tons of herring with 9.4% roe recovery.
3-LY-H-06-98	May 24, 1998	Established a 5-hour commercial herring fishing period beginning 9:30 p.m. Sunday, May 24 until 2:30 a.m. Monday, May 25. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Herring samples obtained by commercial fishermen indicated a majority of the fish were ripe with roe recovery ranging from 10.4% to 15.2% and averaged 12.8% for 3 inch mesh gillnet samples. Approximately 55.2 tons of herring with an average of 9.8% roe was harvested during the fifth commercial fishing period. The cumulative harvest was 153.2 tons of herring with 9.5% roe recovery.
3-LY-H-07-98	May 25, 1998	Established a 2-hour commercial herring fishing period beginning 12:30 p.m. Monday, May 25 until 2:30 p.m. Monday, May 25. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Fishing period based on harvest of approximately 108.5 tons of herring with an average of 9.3% roe during the last commercial fishing period. The cumulative harvest was 261.7 tons of herring with 9.4% roe recovery.
3-LY-H-08-98	May 25, 1998	Established a 4.5-hour commercial herring fishing period beginning 11:30 p.m. Monday, May 25 until 4:00 a.m. Tuesday, May 26. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	The harvest of approximately 58.7 tons of herring with an average of 8.7% roe during the seventh commercial fishing period earlier on May 25 indicated that roe recovery is better during the early morning high tide. The cumulative harvest was 320.4 tons of herring with 9.3% roe recovery.
3-LY-H-09-98	May 26, 1998	Established a 5-hour commercial herring fishing period beginning 11:00 p.m. Tuesday, May 26 until 4:00 a.m. Wednesday, May 27. Also restricted gear	Herring samples obtained by commercial fishermen indicated a majority of the fish were ripe with roe recovery ranging from 10.8% to 16.8% and averaged 13.8% for 3 inch mesh gillnet samples. Approximately 138.2 tons of herring with an average of 9.8% roe

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
		to no more than 50 fathoms and one gillnet per vessel.	was harvested during the eighth commercial fishing period. The cumulative harvest was 458.2 tons of herring with 9.4% roe recovery.
3-LY-H-10-98	May 28, 1998	Established a 3-hour commercial herring fishing period beginning 1:00 a.m. Thursday, May 28 until 4:00 a.m. Thursday, May 28. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Fishing period based on the harvest of approximately 177.3 tons of herring with an average of 10.0% roe during the ninth commercial fishing period earlier on May 27. The cumulative harvest was 625.5 tons of herring with 9.6% roe recovery.
3-LY-H-11-98	May 29, 1998	Established a 4-hour commercial herring fishing period beginning 1:00 a.m. Friday, May 29 until 5:00 a.m. Friday, May 29. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Fishing period based on harvest of approximately 64.8 tons of herring with an average of 9.4% roe during the tenth commercial fishing period earlier on May 28. The cumulative harvest was 700.7 tons of herring with 9.6% roe recovery. The preseason harvest projection was 650 to 850 tons with a midpoint of 750 tons.

Appendix F.4. Commercial herring fishery data, Cape Romanzof District, 1980-1998.

	1980	1981	1982	1983 ^a	1984	1985	1986	1987 ^b	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	5 Yr. Avg 1993-97
Catch (st)	611	720	657	816	1,185	1,299	1,865	1,342	1,119	926	329	526	530	371	456	541	752	879	727	600
Hours Fished	326	120	180	144	90	60	42	8	11	13	3	5	6	13	7	15	34	29.5	35	20
Percent Roe Recovery	9.8	8	9.3	9	8.6	8.3	9.2	8.9	9.1	9.33	8.4	8.8	8	9.6	9.2	10.1	10.6	10.2	9.6	9.9
Average Weight of Fish (Grams) ^c			209	226	240	240	253	287	309	310	304	343	354	373	382	365	360	359	368	368
Estimated Value (\$ millions)	0.13	0.21	0.22	0.37	0.31	0.55	1.14	1	1.02	0.49	0.15	0.21	0.16	0.11	0.12	0.33	0.64	0.19	0.13	0.28
Number of Buyers	2	4	2	3	3	2	5	9	6	6	4	2	2	2	2	2	3	3	1	2
Number of Fishermen	69	111	75	63	66	73	97	157	113	115	95	80	73	41	55	49	63	65	41	55
Number of Boats	54	82	50	57	59	69	90	152	108	110	90	79	73	41	54	49	63	65	41	54
Number of Boats with Shakers ^d	12	11	10	2	1	2	12	22	-	-	-	-	-	-	-	-	-	-	-	-
% Effort by Local Fishermen ^f	70	81	85	92	99	91	84	53	63	87	76	96	97	95	95	98	95	95	98	96
% Harvest by Local Fishermen ^f	40	60	84	88	100	94	70	33	60	82	77	97	96	91	92	99	96	95	98	95
Biomass Estimate ^g	3,000	4,900	4,900	5,500	6,100	7,000	7,500	7,200	6,600	4,400	4,500	4,500	4,500	4,000	5,000	5,000	6,000	5,000	4,500	5,000
Exploitation Rate	20.4	14.7	13.4	14.8	19.4	18.6	24.9	18.6	17.0	21.0	7.3	11.7	11.8	9.3	9.1	10.8	12.5	17.6	16.2	11.9

^a Exclusive Use Regulation into effect.

^b Last year hydraulic shakers were allowed

^c Estimated by department from commercial harvest samples.

^d Numbers of boats using shakers were estimated.

^f Local fishermen described as residents of Chevak, Scammon Bay, and Hooper Bay.

^g Biomass estimate is a qualitative estimate of herring abundance, except for aerial survey biomass estimate in 1987.

Appendix F.5. CFEC herring gear permits issued
by residence, Cape Romanzof
District, 1998. ^a

Residence	GillNet Permits (G34Y)
Hooper Bay	42
Scammon Bay	22
Chevak	16
Bethel	1
Kotlik	1
Mountain Village	1
	83

^a Counts are for initial issues only and do not include transfers. Counts include interim use permits.

Appendix F.6. Pacific herring processors and associated data, Cape Romanzof District, 1998.

Commerical Operation (Processing location/ buying station)	Representative	Product	Processing/Tendering Vessels
NorQuest Seafoods, Inc 4225 23rd Ave. W. Seattle, WA 98119	Marty Jacques	Sac Roe Herring (Frozen)	P/V Aleutian Falcon M/V Tracy-D M/V Afognak M/V Zingaro M/V Mr. Shypoke M/V Beverly B

Appendix F.7. Test sample data collected by commercial fishermen, Cape Romanzof District, 1998.

Capture Date/Time	Mesh Size (inches)	Sample Size		% Female	Female % Gonad Maturity			% Roe	Capture Location
		Wt.(kg)	N		Green	Ripe	Spent		
20-May 0930	vmg	10.0	29	66	5	84	11	11.4	multiple locations
	3	10.0	28	61	12	88	0	11.0	multiple locations
	3	10.0	30	57	0	100	0	11.2	multiple locations
	Subtotal	30.0	87	61	6	91	4	11.2	
20-May 1800	2 5/8	10.0	29	41	0	100	0	9.6	onshore, 1/2 mile north of ADFG camp (North Point)
	2 5/8	10.0	30	30	0	100	0	5.2	onshore, 1/2 mile north of ADFG camp (North Point)
	2 5/8	10.0	32	41	0	100	0	9.0	onshore, 1/2 mile north of ADFG camp (North Point)
	2 5/8	10.0	31	39	0	100	0	7.4	onshore, 1/2 mile north of ADFG camp (North Point)
	2 5/8	10.0	31	55	0	100	0	11.4	onshore, 1/2 mile north of ADFG camp (North Point)
	2 5/8	10.0	32	50	0	100	0	10.6	onshore, 1/2 mile north of ADFG camp (North Point)
	Subtotal	60.0	185	43	0	100	0	8.9	
	vmg	10.0	27	41	0	100	0	8.6	onshore, 1/2 mile north of ADFG camp (North Point)
	vmg	10.0	29	38	0	91	9	8.0	onshore, 1/2 mile north of ADFG camp (North Point)
	Subtotal	20.0	56	39	0	95	5	8.3	
	3 1/4	10.0	22	64	0	100	0	15.8	onshore, 1/2 mile north of ADFG camp (North Point)
	3 1/4	10.0	23	43	10	90	0	8.4	onshore, 1/2 mile north of ADFG camp (North Point)
	3 1/4	5.0	11	36	0	100	0	8.0	onshore, 1/2 mile north of ADFG camp (North Point)
	Subtotal	25.0	56	50	4	96	0	10.7	
	Total	135.0	384	47	2	96	2	9.7	
21-May 2100	3	10.0	11	64	0	71	29	10.2	multiple locations
	Subtotal	10.0	11	64	0	71	29	10.2	
	3 1/4	10.0	33	42	7	93	0	13.2	onshore, 1 mile north of ADFG camp (Tim's camp)
	3 1/4	5.0	17	35	0	67	33	9.5	onshore, 1 mile north of ADFG camp (Tim's camp)
	3 1/4	10.0	25	48	0	100	0	11.1	onshore, 1 mile north of ADFG camp (Tim's camp)
	3 1/4	10.0	11	73	0	100	0	16.1	onshore, 1 mile north of ADFG camp (Tim's camp)
	Subtotal	35.0	86	47	3	93	5	12.5	

-Continued-

Appendix F.7. (page 2 of 3).

Capture Date/Time	Mesh Size (inches)	Sample Size		% Female	Female % Gonad Maturity			% Roe	Capture Location
		Wt.(kg)	N		Green	Ripe	Spent		
21-May continued	2 7/8	10.0	27	33	0	100	0	7.5	onshore, north of Tim's camp
	2 7/8	10.0	27	48	8	92	0	10.8	onshore, north of Tim's camp
	Subtotal	20.0	54	41	5	95	0	9.2	
	Total	65.0	151	46	3	91	6	11.2	
22-May 0900	3	7.4	20	40	0	100	0	7.5	multiple locations
	Subtotal	7.4	20	40	0	100	0	7.5	
22-May 2030	3	10.0	27	59	0	94	6	13.0	half-way between ADFG camp and Tim's camp
	3	7.7	21	57	17	83	0	11.7	half-way between ADFG camp and Tim's camp
	3	3.5	9	67	17	83	0	13.1	mouth of bay at Cape
	3	7.1	22	36	0	100	0	7.3	onshore, north of Tim's camp
	3	10.0	27	48	0	100	0	10.2	west and south of Hooper Bay camp at Staknovik
	3	10.0	25	68	0	100	0	13.2	Felix Walker's and Joe Bell's camp
	3	10.0	26	54	0	93	7	11.2	1/2 mile south of ADFG camp (South Point)
	3	10.0	26	46	0	100	0	10.2	1/2 mile south of ADFG camp (South Point)
	Subtotal	68.3	183	54	3	95	2	11.2	
	2 7/8	10.0	27	59	0	100	0	13.4	1/2 mile south of ADFG camp (South Point)
	Subtotal	10.0	27	59	0	100	0	13.4	
	Total	85.7	230	53	2	96	2	32.1	
23-May 1000	3	10.0	25	48	0	100	0	12.0	onshore, 1 mile north of ADFG camp (Tim's camp)
	3	10.0	26	54	7	86	7	10.0	onshore, 1 mile north of ADFG camp (Tim's camp)
	Subtotal	20.0	51	51	4	92	4	11.0	
	3 1/4	10.0	25	60	0	100	0	13.8	onshore, near North Point
	3 1/4	10.0	25	68	0	100	0	15.6	onshore, near North Point
	Subtotal	20.0	50	64	0	100	0	14.7	
Total		40.0	101	57	2	97	2	12.9	

-Continued-

Appendix F.7. (page 3 of 3).

Capture Date/Time	Mesh Size (inches)	Sample Size		% Female	Female % Gonad Maturity			% Roe	Capture Location
		Wt.(kg)	N		Green	Ripe	Spent		
24-May 1315	3	10.0	24	46	0	100	0	10.4	onshore, north of Tim's camp
	3	10.0	25	68	0	100	0	15.2	onshore, north of Tim's camp
	Subtotal	20.0	49	57	0	100	0	12.8	
	2 7/8	10.0	27	48	0	100	0	10.6	onshore, south of Tim's camp
	2 7/8	10.0	25	64	0	100	0	13.6	onshore, south of Tim's camp
	Subtotal	20.0	52	56	0	100	0	12.1	
	Total	40.0	101	56	0	100	0	12.5	
26-May 1400	3	10.0	24	79	5	95	0	16.8	north of Castle Rock
	3	10.0	27	63	12	71	18	10.8	north of Castle Rock
	Subtotal	20.0	51	71	8	83	8	13.8	
	3 1/16	10.0	24	46	9	91	0	9.8	south of Castle Rock
	3 1/16	10.0	24	63	0	100	0	14.8	south of Castle Rock
	3 1/16	10.0	27	59	0	88	13	12.4	south of Castle Rock
	Subtotal	30.0	75	56	2	93	5	12.3	
	Total	50.0	126	62	5	88	6	12.9	

Appendix F.8. Subsistence herring harvest (st) and effort data by village, Cape Romanzof, 1975-1998.^a

Year	Scammon Bay		Chevak		Hooper Bay		Totals	
	Harvest	Number of Fishermen	Harvest	Number of Fishermen	Harvest	Number of Fishermen	Harvest	Number of Fishermen
1975	-	-	-	-	2.8	34	2.8	34
1976	0.7	4	0.7	9	3.0	28	4.4	41
1977	-	-	0.2	2	2.4	28	2.5	30
1978	0.7	1	-	-	3.9	29	4.5	30
1979	6.0	21	2.3	21	3.1	42	11.4	84
1980	3.1	18	3.6	20	3.7	23	10.4	61
1981	7.7	16	1.8	9	4.0	20	13.5	45
1982	3.9	15	1.9	10	4.7	18	10.5	43
1983	2.5	14	1.5	5	5.2	18	9.2	37
1984	4.3	16	2.6	7	4.2	24	11.1	47
1985	2.4	11	2.2	13	3.4	20	8.0	44
1986	2.8	17	0.7	4	2.5	19	6.0	40
1987	1.4	8	0.5	5	1.1	10	3.0	23
1988	2.0	7	1.5	6	3.6	19	7.2	32
1989	1.1	7	0.1	1	1.8	16	3.0	24
1990	1.7	5	0.6	3	5.6	24	7.9	32
1991	1.7	7	0.4	3	1.1	8	3.2	18
1992	1.2	10	0.4	4	2.5	16	4.1	30
1993	2.7	17	0.1	1	2.4	24	5.1	42
1994	1.4	9	2.0	16	3.1	23	6.5	48
1995	1.1	11	1.2	9	3.8	22	6.1	42
1996	1.0	10	0.5	4	1.7	15	3.1	29
1997	0.9	10	0.2	3	2.2	21	3.2	34
1998	0.7	7	0.1	2	0.9	7	1.7	16

^a Subsistence survey results are believed to reflect harvest trends, however, reported catches reflect minimum figures since all fishermen cannot be contacted. Note: Data are updated annually as new information is obtained.

Appendix F.9. Subsistence harvest of roe-on-kelp by village, Cape Romanzof District, 1993-1998.

Year	Scammon Bay		Chevak		Hooper Bay		Totals	
	Number of Fishers	Pounds Roe-on-Kelp	Number of Fishers	Pounds Roe-on-Kelp	Number of Fishers	Pounds Roe-on-Kelp	Number of Fishers	Pounds Roe-on-Kelp
1993	9	300			10	213	19	513
1994	7	104	4	135	12	417	23	656
1995	12	298	1	25	13	383	26	706
1996	7	113	2	31	9	480	18	624
1997	6	130	1	25	13	400	20	555
1998	2	420	2	105	3	60	7	585

Appendix F.10. Aerial survey biomass estimates of Pacific herring, Cape Romanzof District, 1998.

Date	Flight		Survey Rating ^b	Spawn		Biomass (st) Estimates by Index Area ^a			
	No.	Hrs.		No.	Length (miles)	KOK	SCB	HPB	Total
20-May	1	0.70	5	0	0.00	368.0	48.0		416.0
25-May	2	0.58	5	0	0.00	0.0	0.0		0.0
29-May	3	0.25	5	0	0.00	0.0	0.0		0.0
Total		1.53		0	0.00				

a Index Areas: KOK-Kokechik Bay and offshore waters from Cape Romanzof to Hooper Bay
SCB-Scammon Bay (Cape Romanzof to Kun River), HPB - Hooper Bay.

b Survey Rating

1=Excellent (calm, no glare)

2=Good (light ripple, uneven lighting, easy to see schools)

3=Fair (light chop, some glare or shadows, relatively easy to see schools)

4=Poor (rough seas, strong glare, difficult to see schools)

5=Unsatisfactory

Appendix F.11. Percent age composition of herring sampled from commercial harvest, Cape Romanzof District, 1980-1998.^a

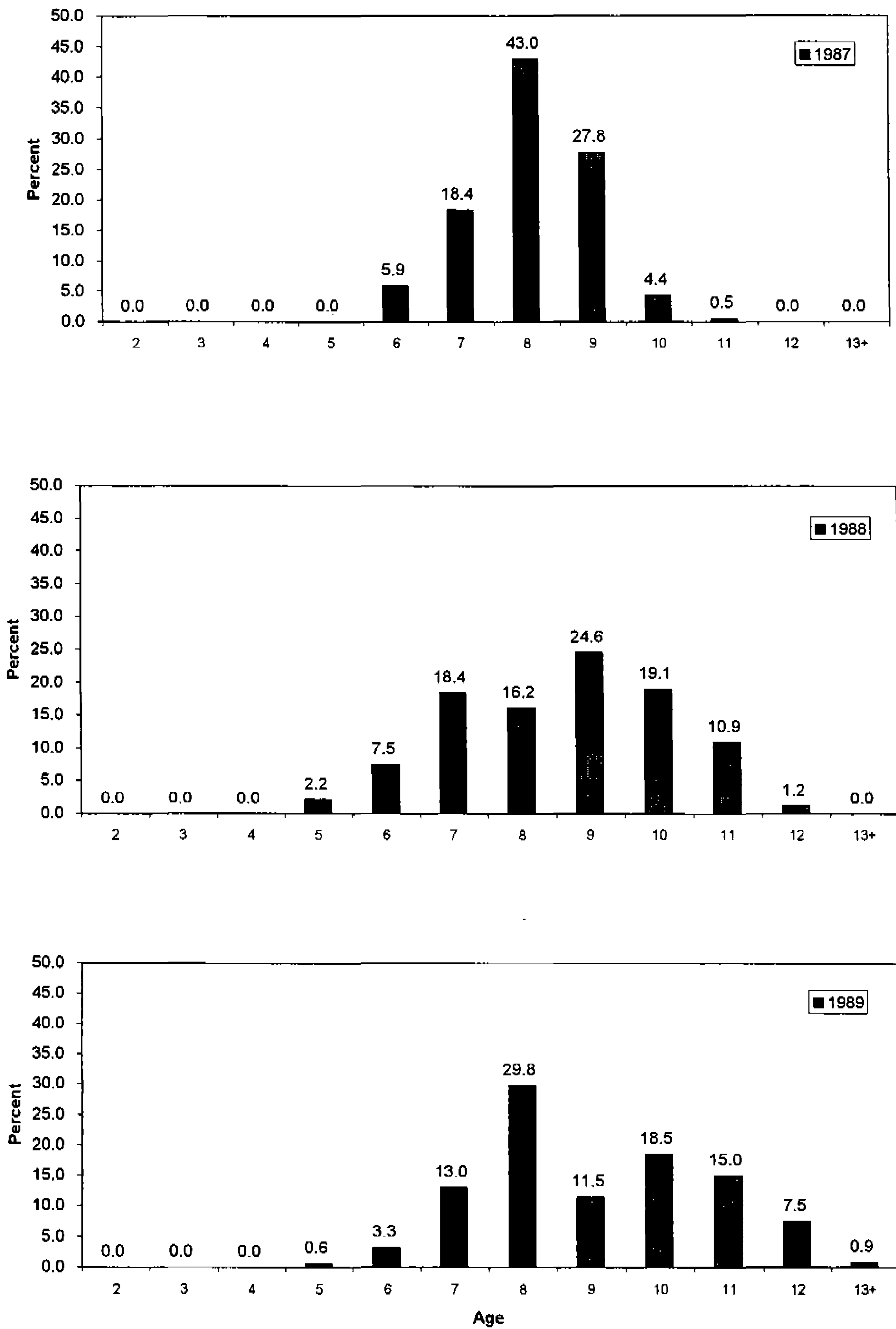
Year	Number Sampled ^b	Age in Years												Total ^c
		2	3	4	5	6	7	8	9	10	11	12	13+	
1980	374	0.0	2.4	20.1	5.1	38.0	9.9	23.0	0.5	0.3	0.5	0.3	0.0	100.1
1981	315	0.0	0.3	55.9	25.1	1.6	11.7	2.2	3.2	0.0	0.0	0.0	0.0	100.0
1982	604	0.0	0.2	13.7	66.4	13.2	1.2	3.3	1.0	1.0	0.0	0.0	0.0	100.0
1983	913	0.0	0.0	15.8	29.8	45.1	6.7	0.4	1.6	0.4	0.1	0.0	0.0	99.9
1984	543	0.0	0.0	0.6	17.3	35.2	41.3	2.9	1.7	0.6	0.4	0.2	0.0	100.2
1985	583	0.0	0.0	6.5	8.9	34.6	29.3	16.6	3.4	0.5	0.0	0.0	0.0	99.8
1986	570	0.0	0.0	0.0	3.3	3.5	30.2	29.6	29.3	3.2	0.5	0.4	0.0	100.0
1987	407	0.0	0.0	0.0	0.0	5.9	18.4	43.0	27.8	4.4	0.5	0.0	0.0	100.0
1988	414	0.0	0.0	0.0	2.2	7.5	18.4	16.2	24.6	19.1	10.9	1.2	0.0	100.1
1989	702	0.0	0.0	0.0	0.6	3.3	13.0	29.8	11.5	18.5	15.0	7.5	0.9	100.1
1990	287	0.0	0.0	0.0	0.7	9.1	10.8	21.6	23.7	9.8	13.2	7.7	3.5	100.1
1991	591	0.0	0.0	0.0	0.2	1.0	29.1	17.4	15.4	13.4	9.0	8.6	5.9	100.0
1992	401	0.0	0.0	0.0	0.0	1.0	1.0	27.7	17.5	17.5	16.7	7.5	11.1	100.0
1993	819	0.0	0.0	0.0	0.7	3.5	2.6	2.0	29.8	13.4	14.8	16.6	16.6	100.0
1994	452	0.0	0.0	0.0	0.0	4.4	6.6	4.0	6.6	29.0	16.6	14.4	18.4	100.0
1995	453	0.0	0.0	0.0	0.7	1.3	13.7	19.4	5.5	6.8	24.7	10.6	17.2	99.9
1996	588	0.0	0.0	0.0	0.0	2.9	1.0	27.4	20.6	8.3	8.3	15.6	15.9	100.0
1997	530	0.0	0.0	0.0	0.2	3.0	5.8	4.7	42.1	15.3	7.0	7.4	14.6	100.1
1998	560	0.0	0.0	0.0	0.4	0.4	10.9	21.1	3.6	34.6	14.1	4.5	10.6	100.2

^a Data from annual Age, Size, and Sex Composition ADF&G Technical Data and RIR Reports.

^b Number sampled shown are number of fish which could be aged.

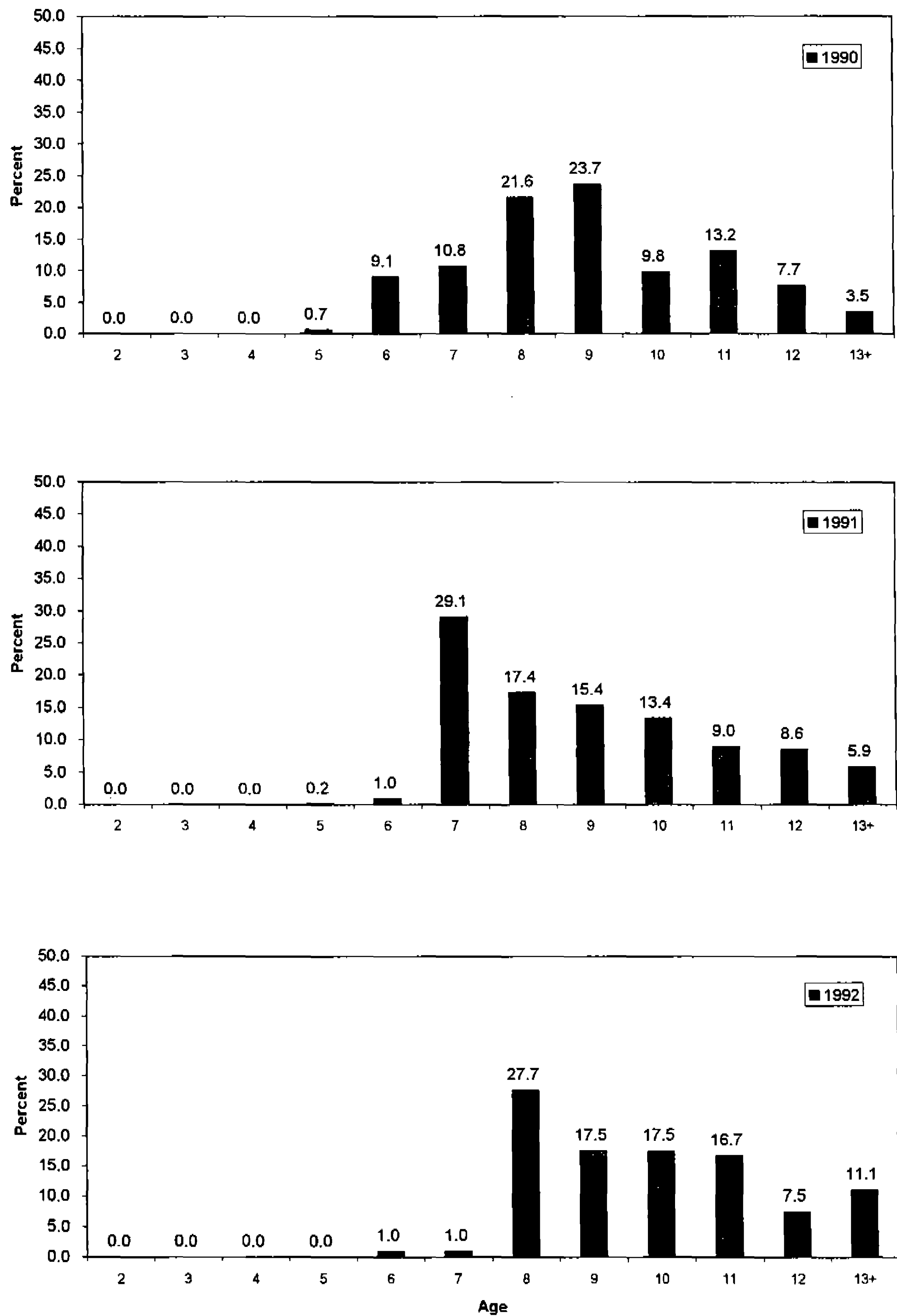
^c Totals may not equal 100% due to rounding errors.

Age Composition of Commercial Herring Harvest



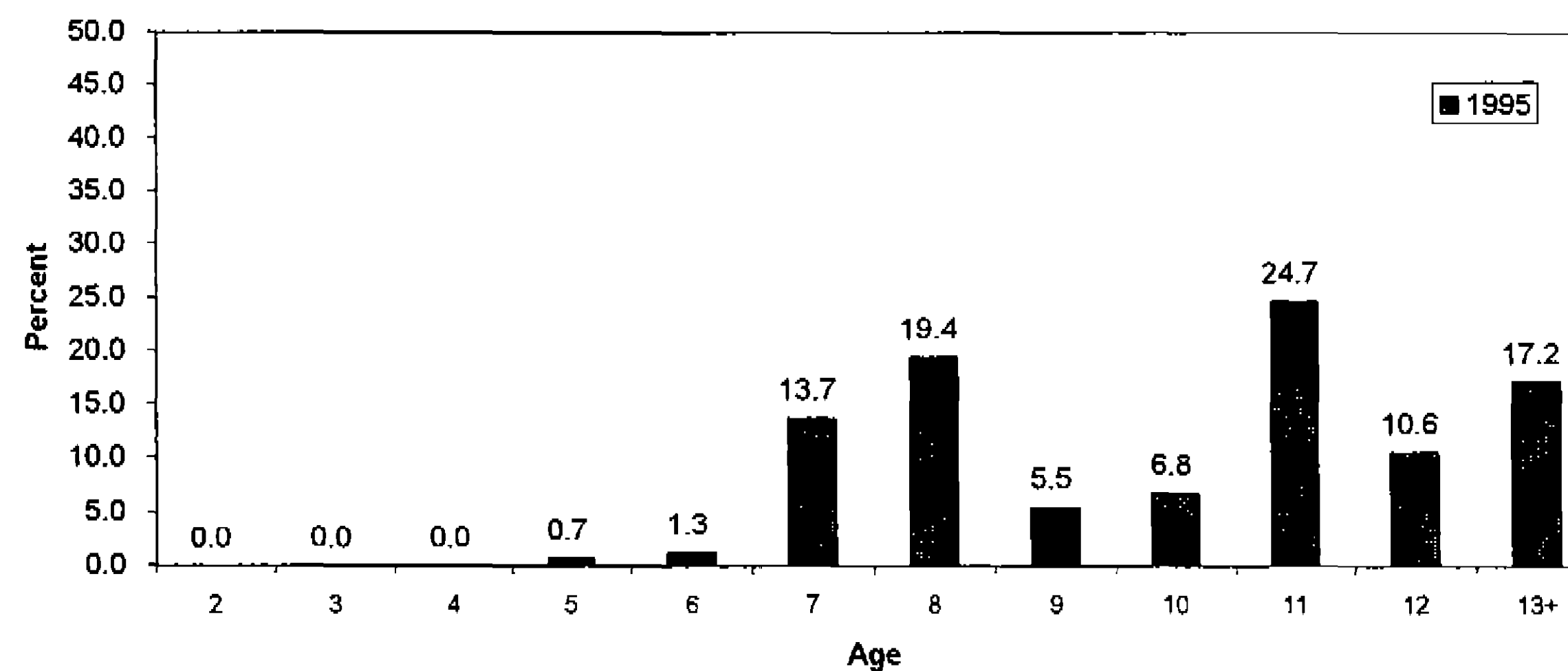
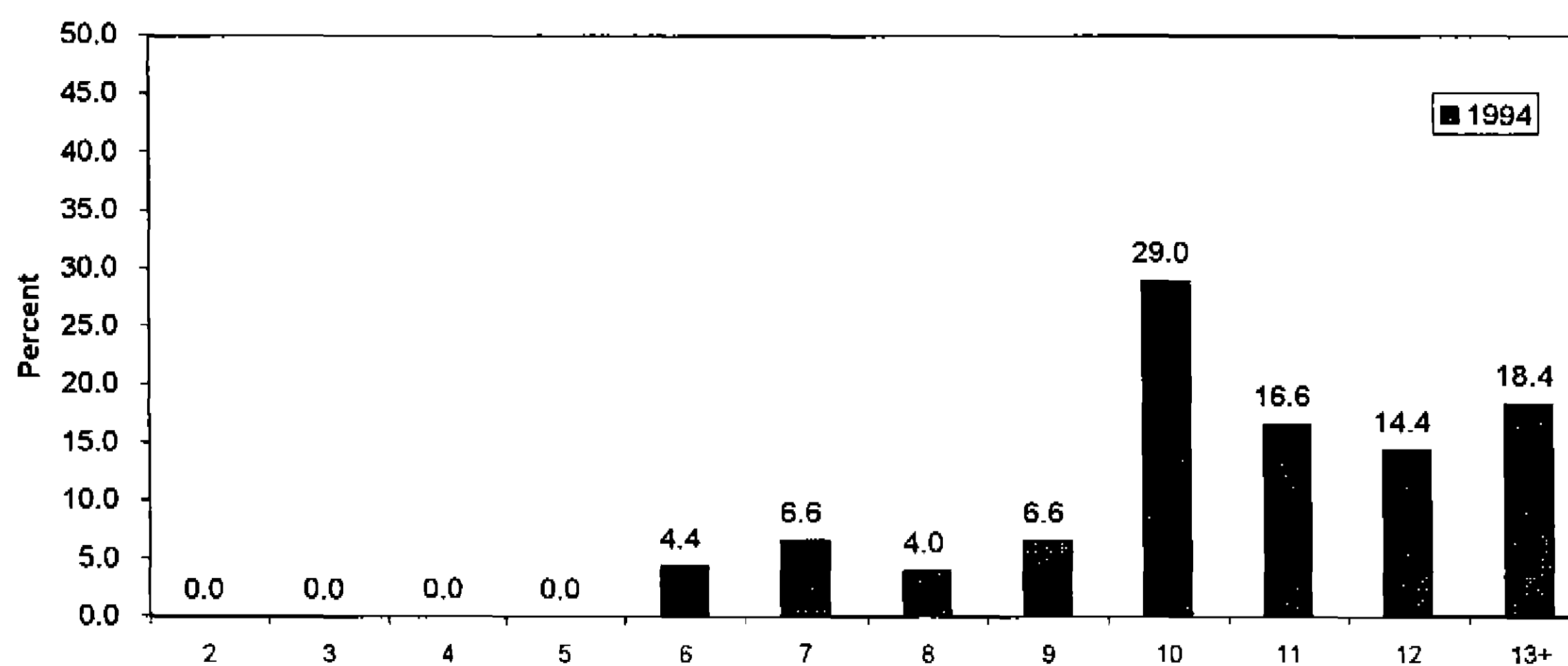
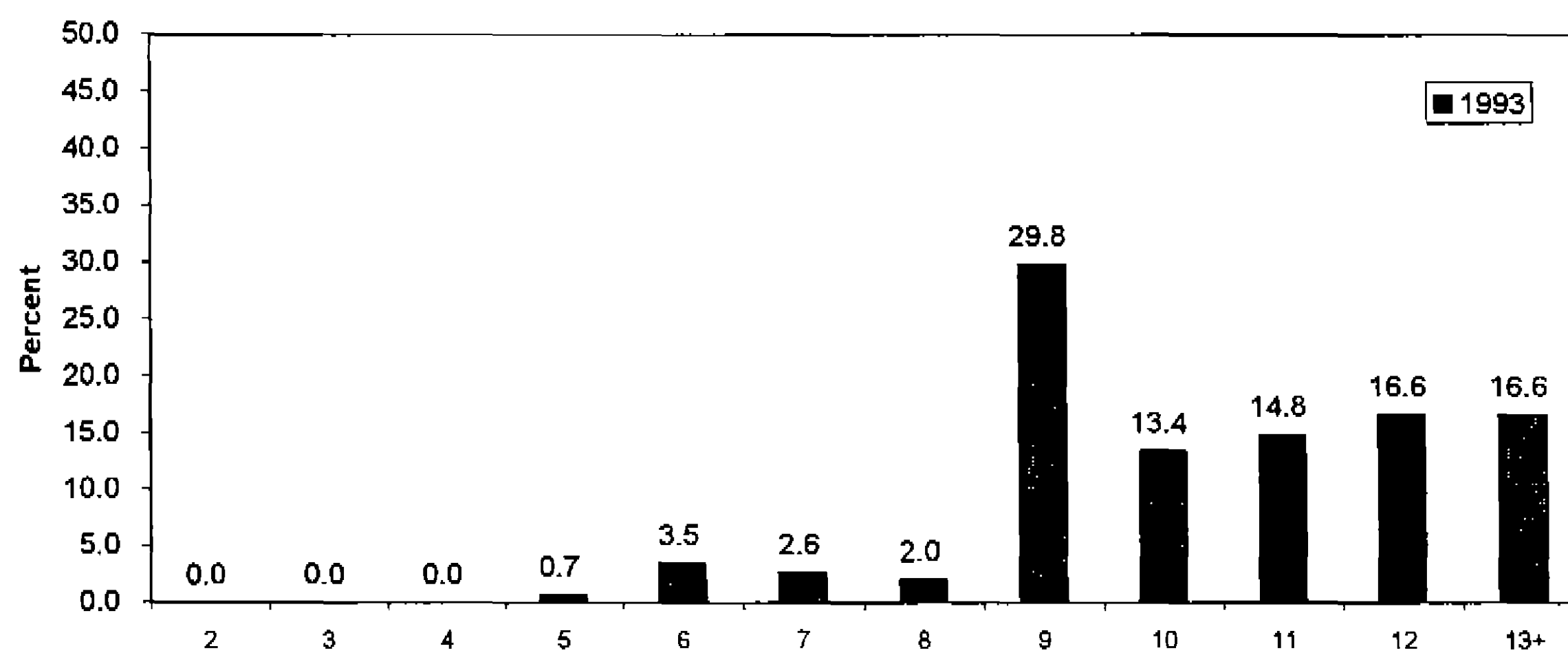
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Age Composition of Commercial Herring Harvest



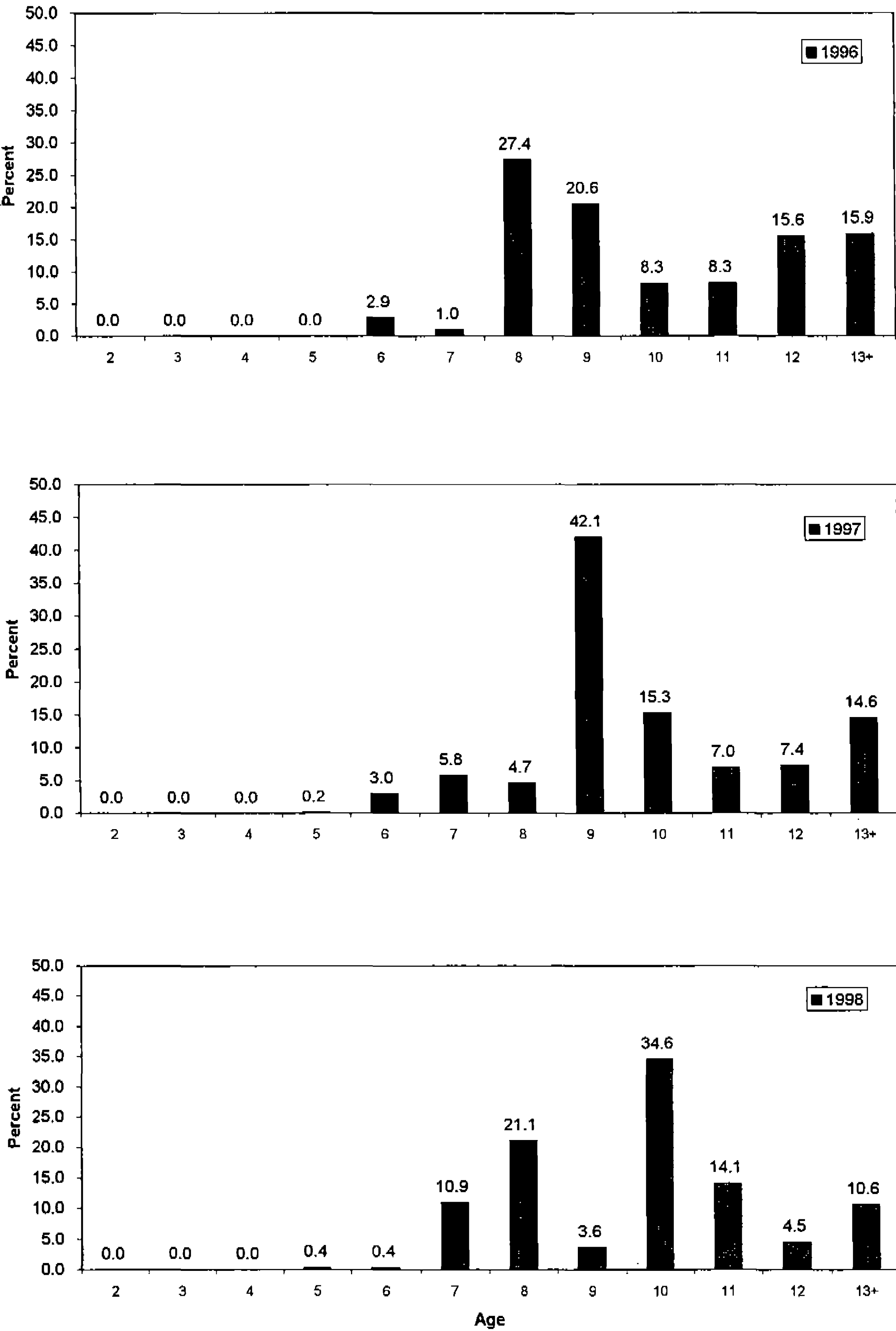
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Age Composition of Commercial Herring Harvest



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Age Composition of Commercial Herring Harvest



Appendix F.13. Percent age composition of herring sampled from variable mesh gillnet catches, Cape Romanzof District, 1980-1998. ^{a, b}

Year	Number Sampled ^c	Age in Years												Total ^d
		2	3	4	5	6	7	8	9	10	11	12	13+	
1980	447	0.4	19.2	17.0	2.0	27.3	6.9	25.3	0.4	0.4	0.4	0.4	0.0	99.7
1981	589	0.0	7.8	55.3	13.2	1.5	10.4	4.8	6.3	0.2	0.0	0.3	0.2	100.0
1982	611	0.7	7.5	20.3	39.3	9.5	1.8	7.4	7.2	5.6	0.7	0.0	0.2	100.2
1983	829	0.0	0.6	21.2	25.2	39.8	5.3	1.4	3.9	1.9	0.5	0.1	0.0	99.9
1984	735	0.0	1.5	5.7	26.9	19.3	36.1	4.8	3.5	1.6	0.3	0.3	0.0	100.0
1985	531	0.0	1.7	21.8	6.4	22.8	16.9	26.2	2.8	0.8	0.6	0.0	0.0	100.0
1986	511	0.0	0.0	4.9	18.2	7.0	25.4	20.7	20.4	2.5	0.6	0.2	0.0	99.9
1987	690	0.0	0.0	0.7	6.7	11.7	18.0	31.7	23.2	7.7	0.3	0.0	0.0	100.0
1988	608	0.0	0.3	3.9	7.9	13.8	19.7	11.7	19.2	14.8	7.4	0.7	0.5	99.9
1989	378	0.0	0.5	1.9	17.5	9.0	13.2	17.7	7.4	11.6	13.2	6.9	1.0	99.9
1990	1,011	0.0	1.0	4.7	3.6	24.6	11.2	12.7	17.5	7.7	9.4	5.3	2.3	100.0
1991	1,152	0.0	0.1	3.0	3.9	3.0	29.3	13.9	15.0	13.4	7.3	6.3	4.8	100.0
1992	994	0.0	0.0	6.4	4.6	4.7	2.0	19.4	12.7	20.6	12.9	7.7	8.8	99.8
1993	1,263	0.0	0.7	2.3	16.9	10.5	5.8	3.9	20.0	10.1	13.6	8.4	7.9	100.1
1994	1,246	0.0	0.0	3.1	2.9	23.8	13.6	5.1	4.7	17.1	9.1	9.3	11.2	99.9
1995	1,398	0.0	0.1	5.4	8.4	2.1	24.4	14.7	5.0	5.3	18.5	7.1	9.0	100.0
1996	1,083	0.0	1.1	1.6	11.6	14.9	3.5	30.9	15.0	5.4	4.0	8.0	4.1	100.1
1997	1,312	0.0	0.6	21.6	1.7	11.5	13.0	2.7	28.4	10.0	3.0	2.4	5.4	100.3
1998	1,262	0.0	0.3	1.7	20.0	2.3	18.8	18.2	2.9	21.2	8.4	2.7	3.5	100.0

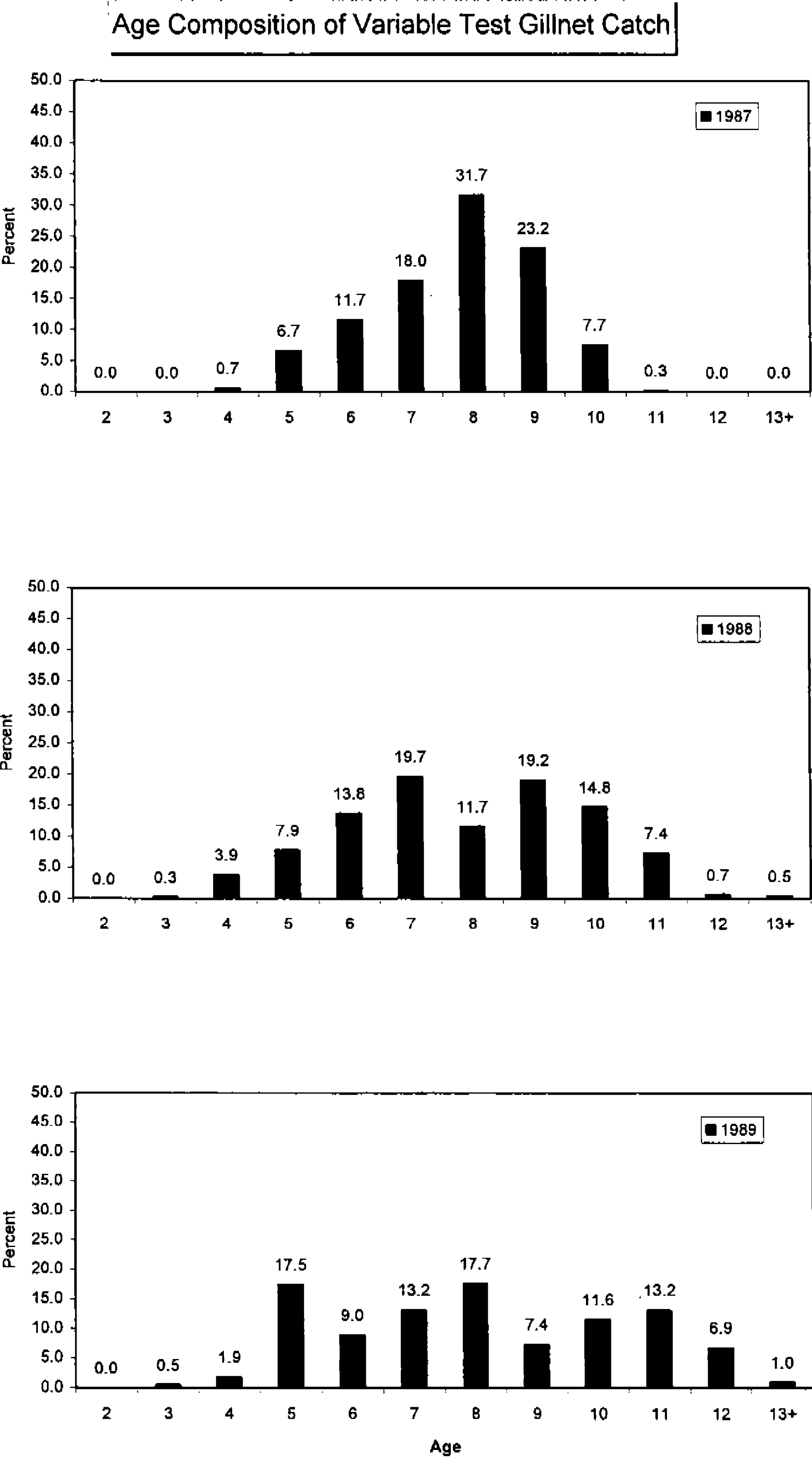
^a Data from annual Age, Size, and Sex Composition ADF&G Technical Data and RIR Reports.

^b Variable mesh test gill net samples include Kokechik Bay and Scammon Bay fish sampled combined.

^c Number sampled shown are number of fish which could be aged.

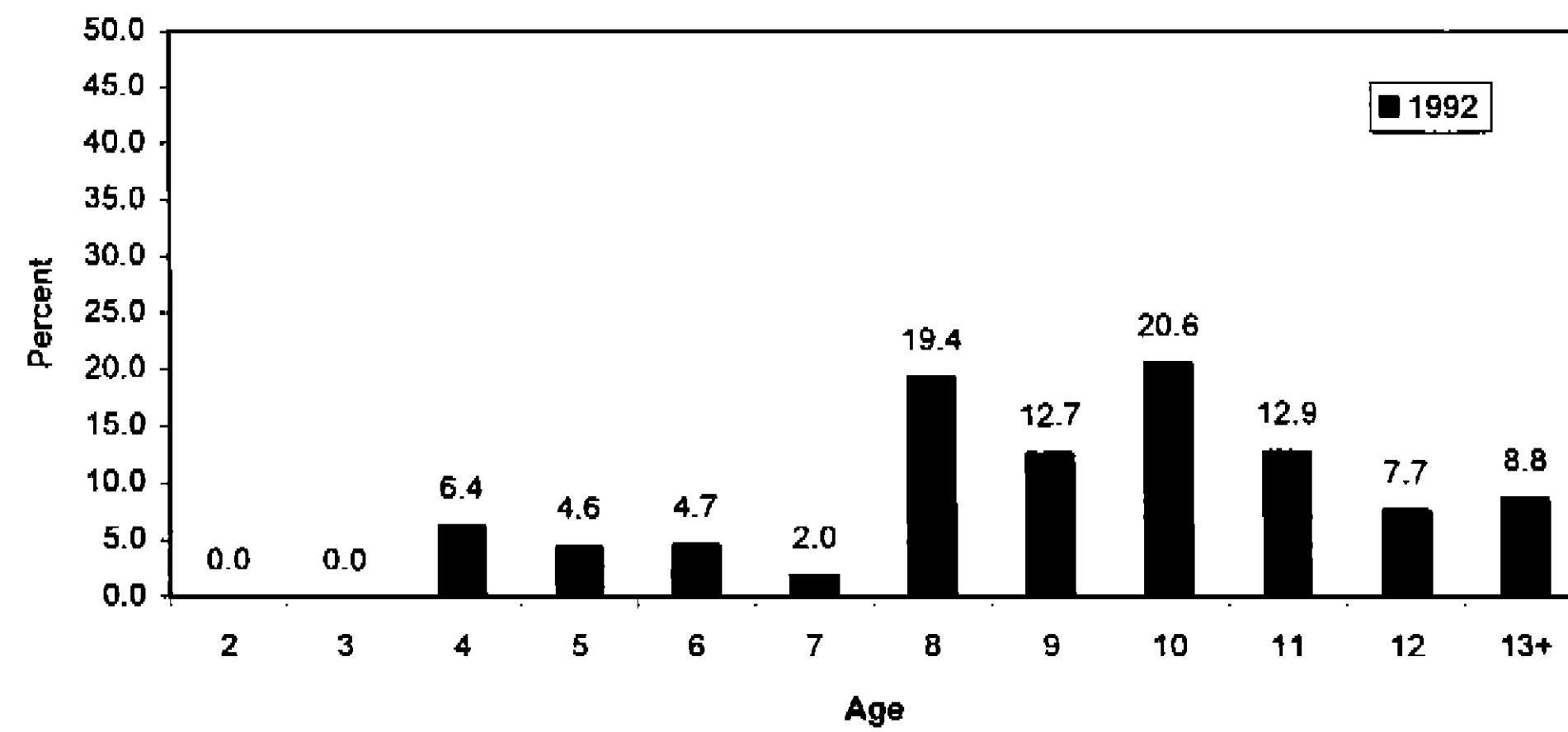
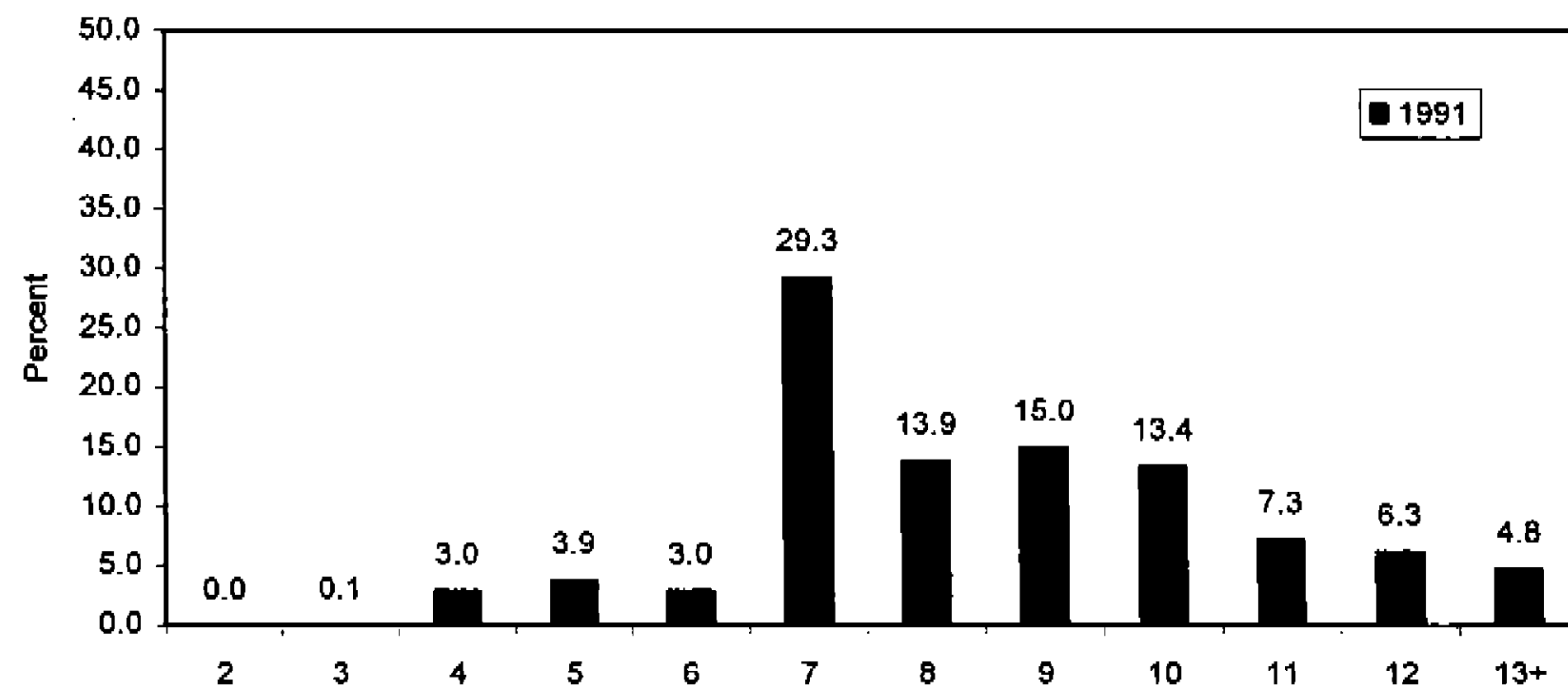
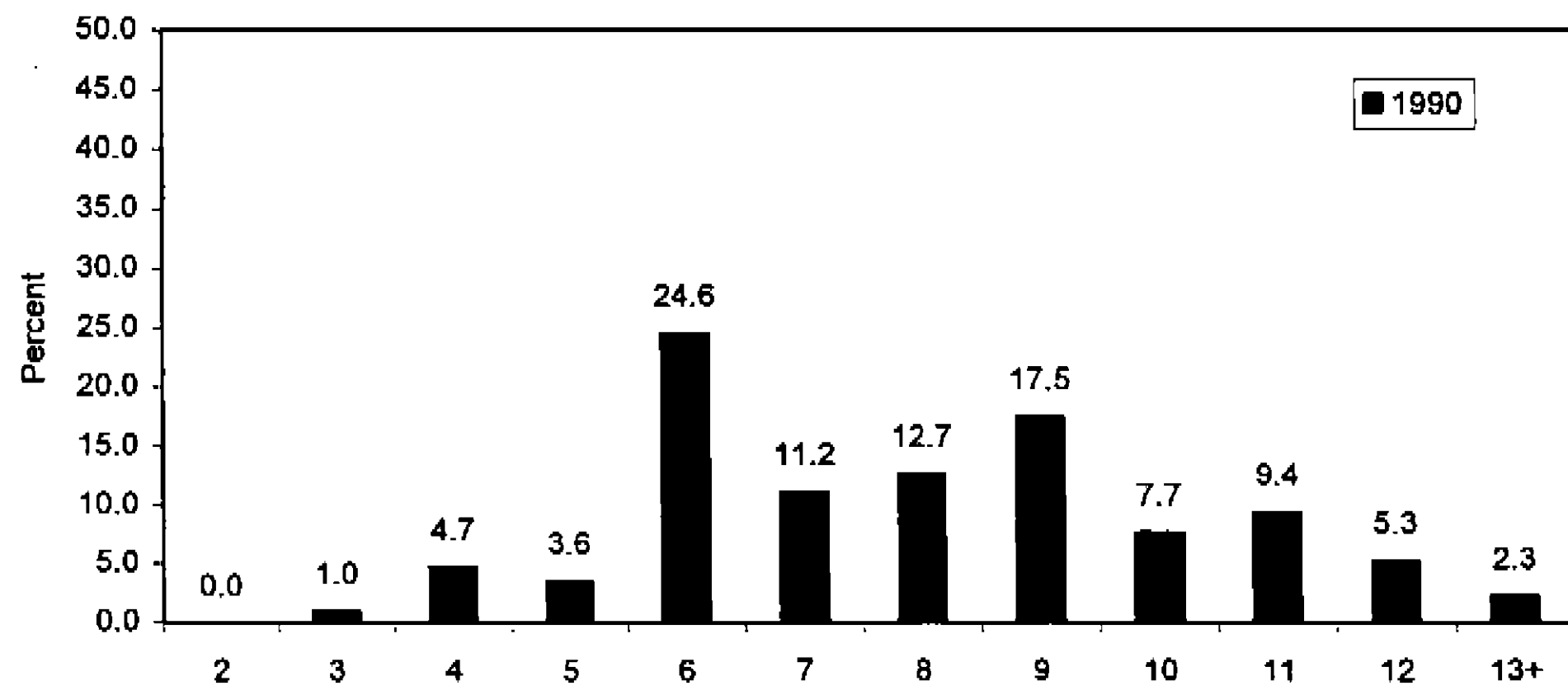
^d Totals may not equal 100% due to rounding errors.

Appendix F.14. Age composition of Pacific herring sampled from variable mesh gillnet catches, Cape Romanzof District, 1987-1998.



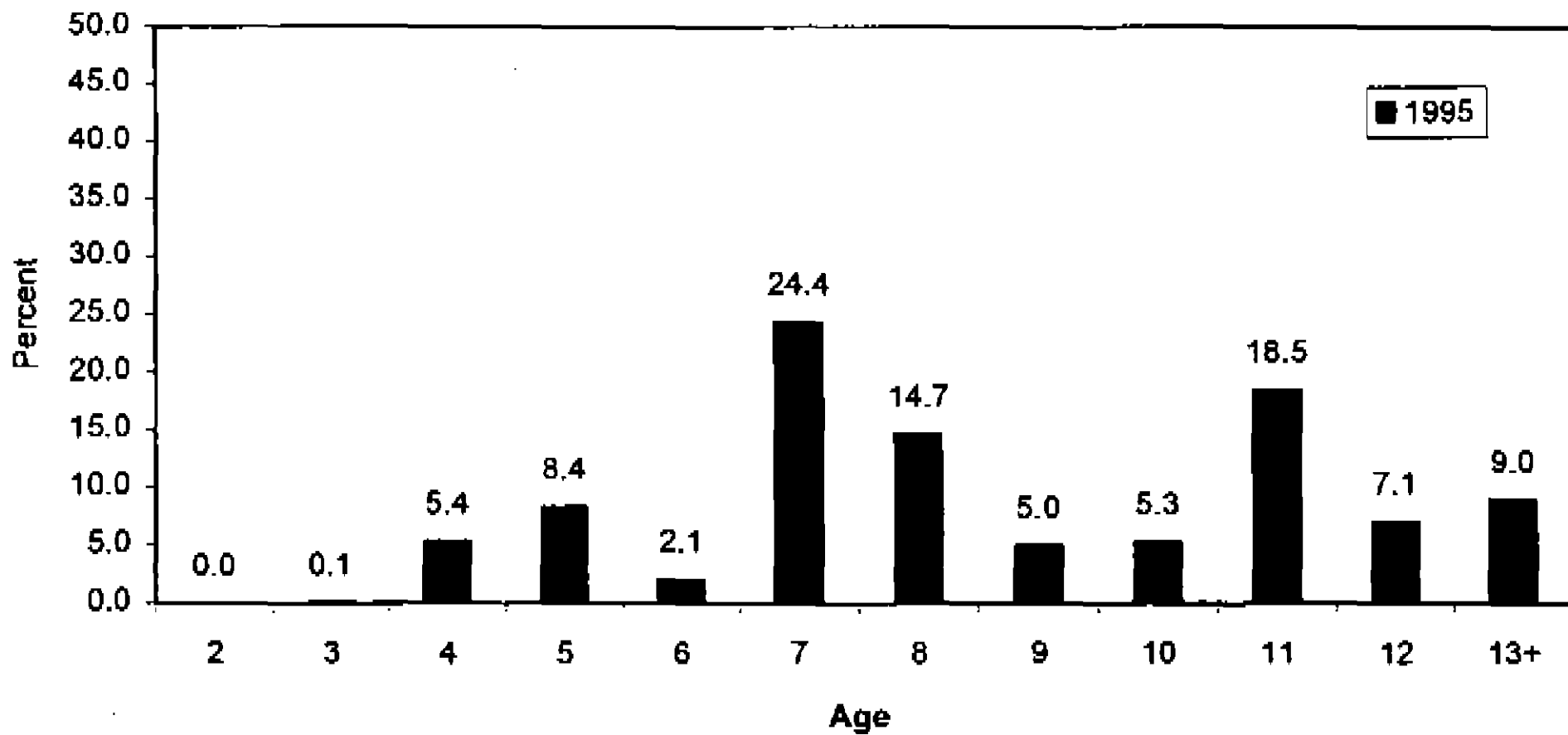
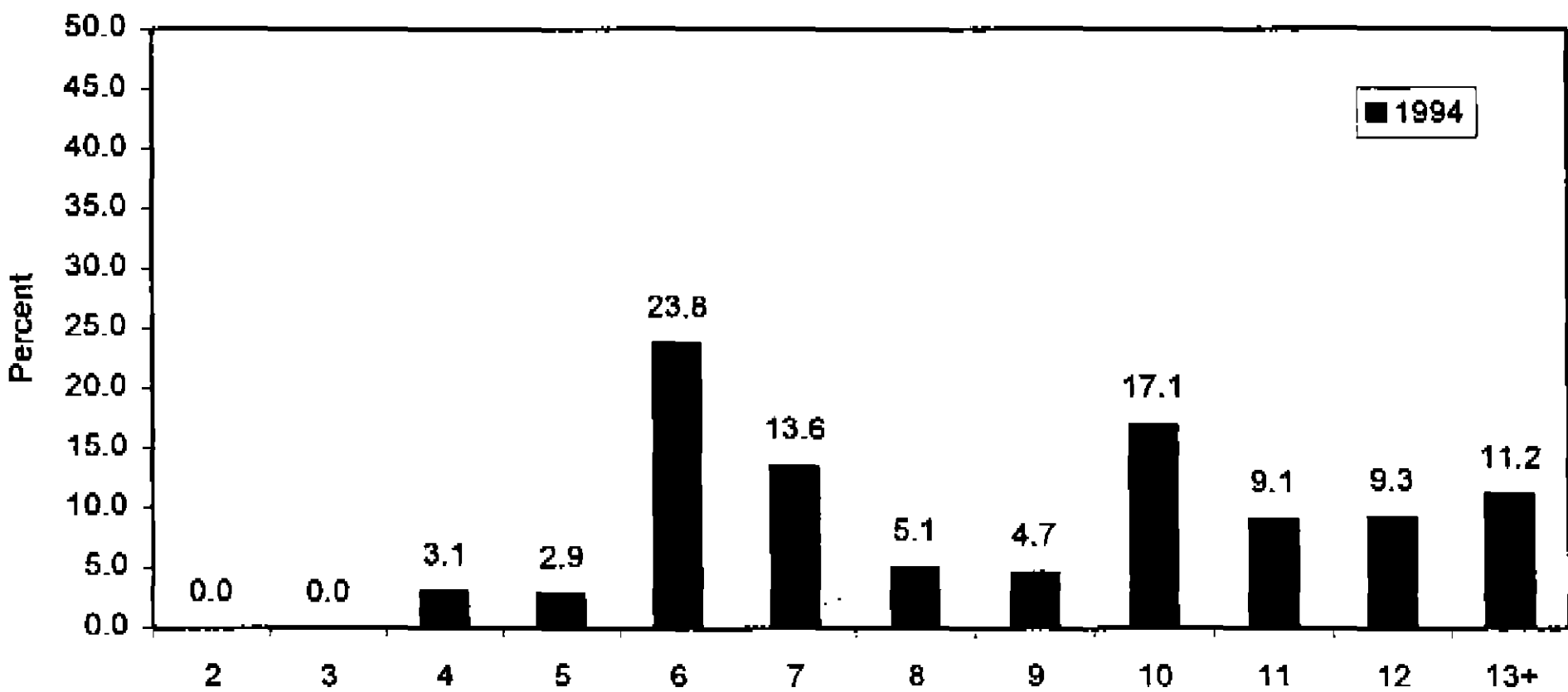
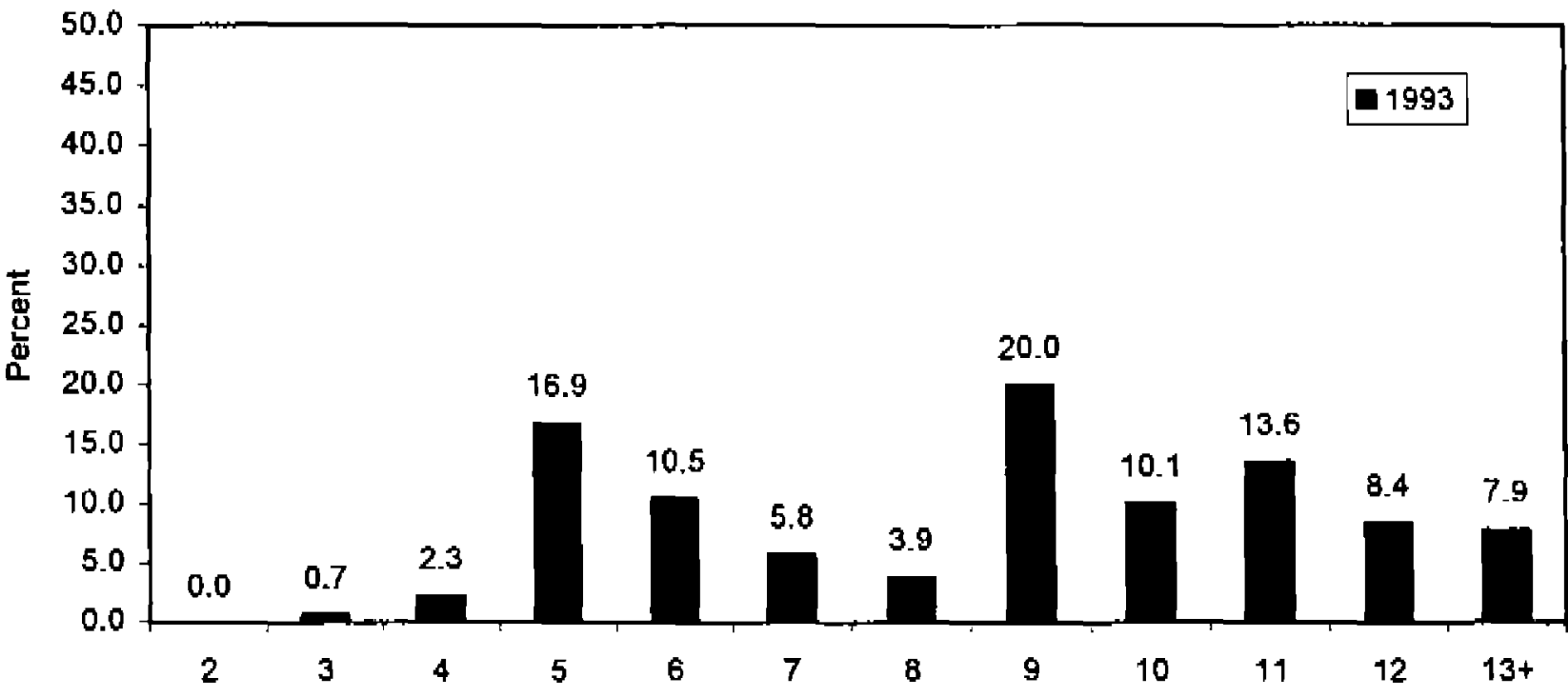
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Age Composition of Variable Test Gillnet Catch



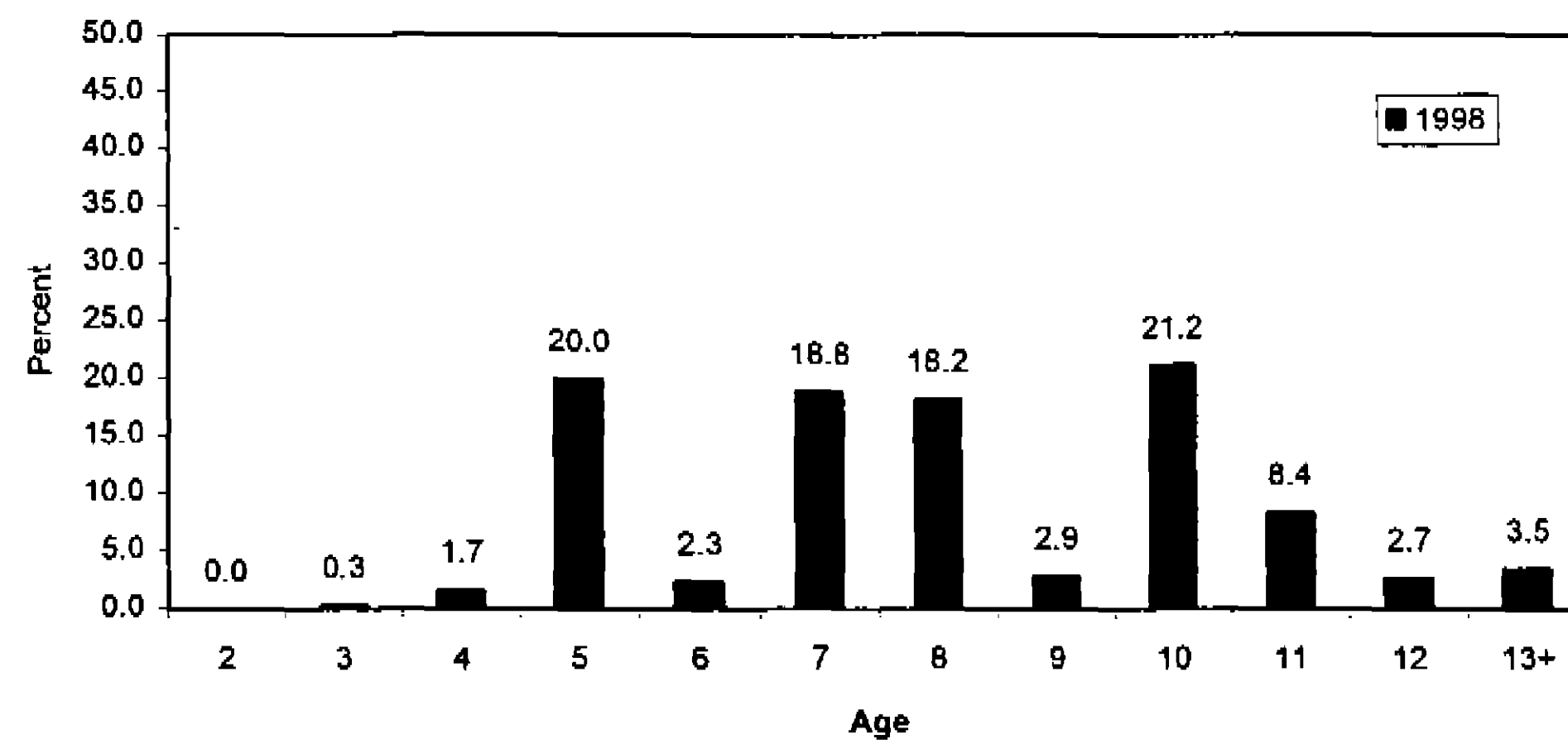
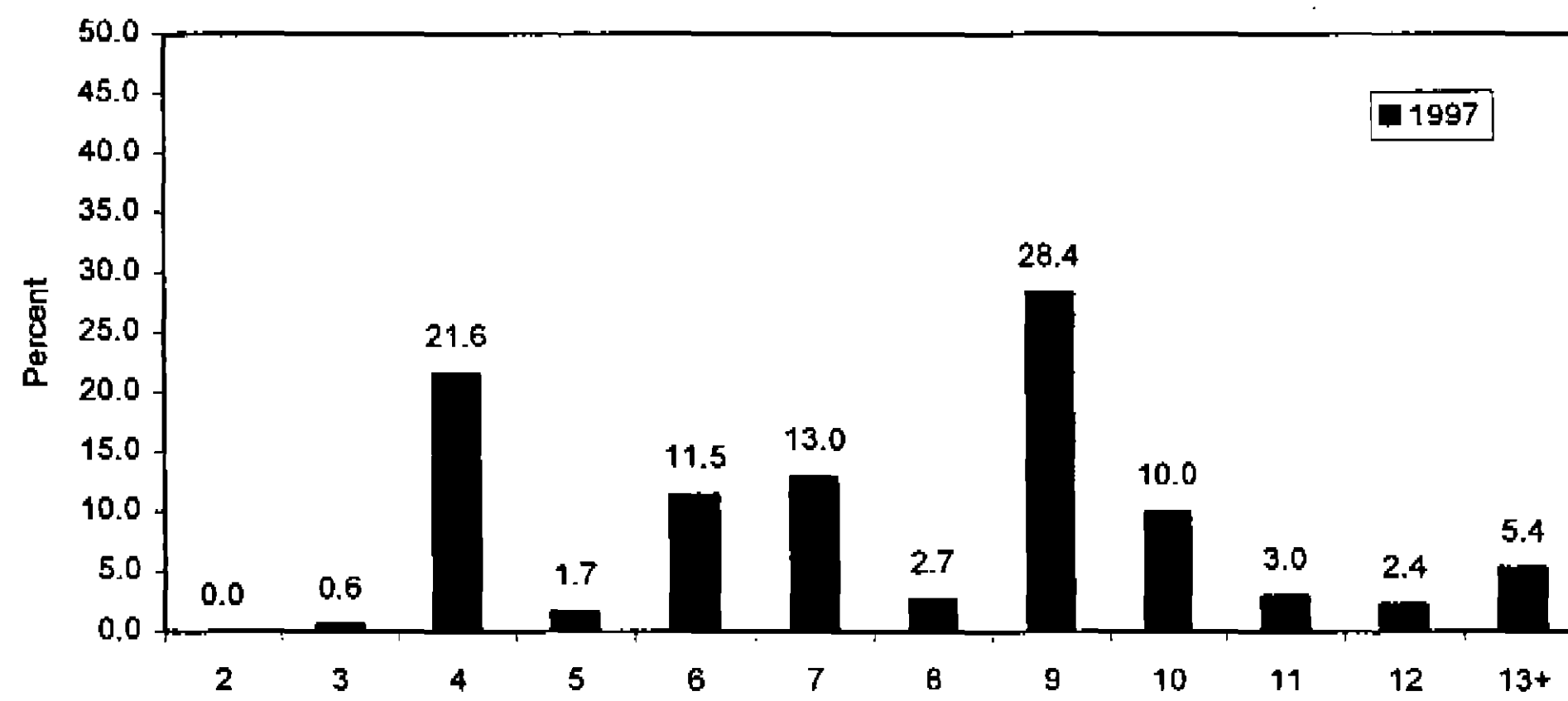
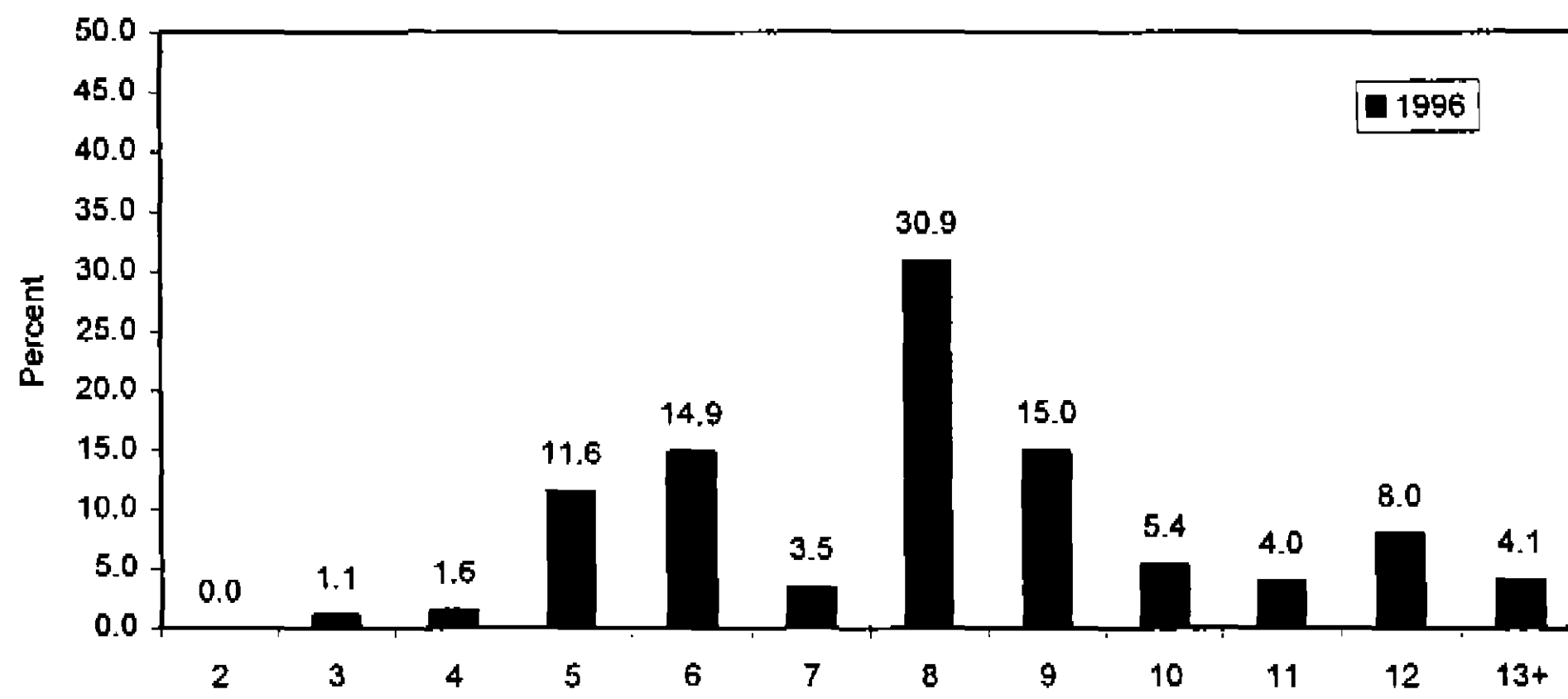
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Age Composition of Variable Test Gillnet Catch



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Age Composition of Variable Test Gillnet Catch



Appendix F.15. Herring spawn weight, cumulative weight and related data from artificial substrate, Cape Romanzof, 1998.

File: SUM98T8.XLS

		Platforms 1-25					Platforms 26-40					Combined Sections			
Date	Time	Daily Weight (1g)	Cum. Weight (g)	Daily Prop	Cum. Prop	Platforms Not Visited	Daily Weight (1g)	Cum. Weight (g)	Daily Prop	Cum. Prop	Platforms Not Visited	Daily Weight (g)	Cum. Weight (g)	Daily Proportion	Cum. Proportion
10-May															
11-May															
12-May															
13-May															
14-May a															
15-May b	11:30	0.0	0.0	0.000	0.000		0.0	0.0	0.000	0.000		0.0	0.0	0.000	0.000
16-May b	11:45	0.0	0.0	0.000	0.000		0.0	0.0	0.000	0.000		0.0	0.0	0.000	0.000
17-May c		0.0	0.0	0.000	0.000	1-25	0.0	0.0	0.000	0.000	26-40	0.0	0.0	0.000	0.000
18-May		1.0	1.0	0.000	0.000		0.0	0.0	0.000	0.000		1.0	1.0	0.000	0.000
19-May	14:00	1624.0	1625.0	0.515	0.516		105.0	105.0	0.449	0.449		1729.0	1730.0	0.511	0.511
20-May		30.0	1655.0	0.010	0.525		9.0	114.0	0.038	0.487		39.0	1769.0	0.012	0.522
21-May		745.0	2400.0	0.236	0.761		65.0	179.0	0.278	0.765		810.0	2579.0	0.239	0.762
22-May		0.0	2400.0	0.000	0.761		2.0	181.0	0.009	0.774		2.0	2581.0	0.001	0.762
23-May d		0.0	2400.0	0.000	0.761		0.0	181.0	0.000	0.774		0.0	2581.0	0.000	0.762
24-May		0.0	2400.0	0.000	0.761		0.0	181.0	0.000	0.774		0.0	2581.0	0.000	0.762
25-May	07:50	0.0	2400.0	0.000	0.761		0.0	181.0	0.000	0.774		0.0	2581.0	0.000	0.762
26-May		0.0	2400.0	0.000	0.761		0.0	181.0	0.000	0.774		0.0	2581.0	0.000	0.762
27-May	09:00	6.0	2406.0	0.002	0.763		0.0	181.0	0.000	0.774		6.0	2587.0	0.002	0.764
28-May	10:00	0.0	2406.0	0.000	0.763		0.0	181.0	0.000	0.774		0.0	2587.0	0.000	0.764
29-May		0.0	2406.0	0.000	0.763		0.0	181.0	0.000	0.774		0.0	2587.0	0.000	0.764
30-May	11:30	746.0	3152.0	0.237	1.000		51.0	232.0	0.218	0.991		797.0	3384.0	0.235	0.999
31-May	13:30	0.0	3152.0	0.000	1.000		0.0	232.0	0.000	0.991		0.0	3384.0	0.000	0.999
01-Jun	14:30	0.0	3152.0	0.000	1.000		2.0	234.0	0.009	1.000		2.0	3386.0	0.001	1.000
02-Jun		0.0	3152.0	0.000	1.000		0.0	234.0	0.000	1.000		0.0	3386.0	0.000	1.000
03-Jun		0.0	3152.0	0.000	1.000		0.0	234.0	0.000	1.000		0.0	3386.0	0.000	1.000
04-Jun		0.0	3152.0	0.000	1.000		0.0	234.0	0.000	1.000		0.0	3386.0	0.000	1.000
05-Jun f		0.0	3152.0	0.000	1.000	1-25	0.0	234.0	0.000	1.000	26-40	0.0	3386.0	0.000	1.000
06-Jun f		0.0	3152.0	0.000	1.000	1-25	0.0	234.0	0.000	1.000	26-40	0.0	3386.0	0.000	1.000
07-Jun		0.0	3152.0	0.000	1.000		0.0	234.0	0.000	1.000		0.0	3386.0	0.000	1.000

a Platforms set-up on May 14 between 1030 and 1330. No spawn was observed anywhere within the study area.

b No herring or spawn observed anywhere within the study area.

c No survey conducted due to high winds, assumed no spawn was deposited based on observations May 16 and May 18.

d New spawning activity observed in the study area, but none on the platforms.

f Although no surveys conducted on June 5 or 6 because platforms could not be observed due to high creek and tide levels, assumed no spawn was deposited based on observations on June 4 and June 7.

Appendix F.16. Historical herring spawn deposition weight data from artificial substrate study, Cape Romanzof District, 1992-1998.

Year	Herring Spawn Weight in Grams		
	Platforms 1-25	Platforms 26-40	Total
1992	1,782	688	2,470
1993	1,718	1,736	3,454
1994	2,799	1,257	4,056
1995	3,111	1,874	4,985
1996	3,933	1,666	5,599
1997 ^a	-	-	-
1998	3,152	234	3,386
5-Yr Avg 1992-1996	2,669	1,444	4,113

a Due to high winds and heavy wave action in 1997, the project was not successful.

APPENDIX G

YUKON AREA FRESHWATER FISHERIES

Appendix G.1. Estimated or reported subsistence harvest of pink salmon and other select miscellaneous fish species by surveyed villages, Yukon Area, 1998.

Community	Estimated Subsistence Harvest with Corresponding Confidence Intervals (CI) (Expanded to Estimate Survey Village Harvest)												Reported Numbers of Miscellaneous Fish Species, (Not Expanded)							
	Harvest Strata Combined		Pink Salmon		Whitefish ^a				Pike		Sheefish									
					Large Whitefish		Small Whitefish													
	Total	Households	Estimated	CI(95%)	Estimated	CI(95%)	Estimated	CI(95%)	Estimated	CI(95%)	Estimated	CI(95%)	Burbot	Lamprey	Tomcod	Grayling	Sucker	Arctic Char	Blackfish	
Households	Contacted ^b	Total	(+/-)	Total	(+/-)	Total	(+/-)	Total	(+/-)	Total	(+/-)	Total	(+/-)							
Hooper Bay	196	49	1,941	1,110	647	624	4,972	1,822	1,000	1,150	44	58	2	0	625	0	0	0	11,648	
Scammon Bay	81	23	1,791	1,552	1,219	781	1,957	970	3,591	1,752	109	76	55	0	2,649	0	0	0	51,800	
Coastal District	277	72	3,732	1,908	1,866	1,000	6,929	2,064	4,591	2,096	153	96	57	0	3,274	0	0	0	63,448	
Sheldon's Point	35	32	299	82	556	169	1,807	409	24	11	2,577	579	433	0	251	0	0	8	58,450	
Alakanuk	120	32	239	172	284	189	2,198	1,035	615	711	2,390	1,825	151	0	195	0	0	2	10,920	
Emmonak	159	62	145	112	2,284	1,159	4,215	1,903	613	269	2,083	799	332	0	1,421	0	0	0	22,505	
Kotlik	95	26	907	791	1,206	471	1,199	644	1,206	1,313	3,152	1,293	326	0	260	0	0	0	5,200	
District 1	409	152	1,590	822	4,330	1,276	9,419	2,296	2,458	1,517	10,202	2,445	1,242	0	2,127	0	0	10	97,075	
Mountain Village	148	41	753	729	4,352	2,419	670	513	4,118	1,860	1,437	1,208	1,208	2,172	0	313	0	44	49,410	
Pitkas Point	31	26	330	128	1,384	297	473	220	458	157	277	80	225	0	0	12	0	0	12,600	
St. Mary's	116	37	467	785	4,827	3,512	777	695	3,801	2,894	1,451	696	948	402	0	2	0	0	49,775	
Pilot Station	90	39	0	0	1,856	725	350	259	782	334	845	411	1,035	0	0	20	0	0	25,990	
Marshall	62	21	0	0	2,734	1,770	0	0	2,201	1,522	492	279	1,288	0	0	0	0	0	1,400	
District 2	447	164	1,550	1,079	15,153	4,683	2,270	928	11,360	3,780	4,502	1,483	4,704	2,574	0	347	0	44	139,175	
Russian Mission	50	18	211	5	188	75	0	0	1,261	730	71	66	23	0	0	0	0	0	0	
Holy Cross	64	27	150	131	483	236	344	507	413	251	160	173	76	0	0	0	0	0	80	
Shageluk	39	26	1,256	885	418	206	3,233	2,887	142	64	243	140	18	0	0	0	0	0	0	
District 3	153	71	1,617	894	1,089	322	3,577	2,931	1,816	775	474	232	117	0	0	0	0	0	80	
Anvik	39	36	50	0	1,241	106	1,060	0	167	4	81	14	3	0	0	20	0	0	0	
Grayling	55	23	649	161	677	315	818	562	213	107	263	106	17	1	0	10	2	36	0	
Kaltag	51	17	1	0	301	410	357	427	65	0	249	204	7	0	0	126	0	21	0	
Nulato	107	25	0	0	334	478	85	141	10	17	97	76	26	0	0	232	0	84	0	
Koyukuk	43	13	0	0	48	23	50	26	93	52	101	73	9	0	0	0	0	0	0	
Galena	203	46	0	0	840	272	1,318	108	305	406	242	105	102	0	0	10	11	0	2,830	
Ruby	84	14	0	0	1,300	1,082	900	787	60	59	147	133	20	2	0	0	20	0	0	
Huslia	84	19	0	0	55	50	75	101	94	49	113	132	0	0	0	0	0	0	0	
Hughes	26	26	0	0	295	0	638	0	10	0	144	0	1	0	0	47	0	0	0	
Allakaket	61	22	0	0	357	85	0	0	301	124	516	163	201	0	0	0	0	10	0	
Alatna	13	13	0	0	63	13	50	0	4	0	16	7	0	0	0	2	0	0	0	
Bettles	27	22	0	0	12	10	0	0	5	4	7	7	8	0	0	40	0	0	0	
District 4	793	276	700	161	5,523	1,327	5,151	1,077	1,327	448	1,976	370	394	3	0	487	33	151	2,830	
Tanana	128	46	0	0	4,926	819	8,463	667	379	46	1,557	259	116	3	0	28	95	1	15	
Rampart	25	22	0	0	5	3	5	3	0	0	0	0	0	0	0	104	0	0	0	
Stevens Village	38	28	0	0	57	15	189	164	153	60	40	22	20	0	0	0	0	0	0	
Birch Creek	14	12	0	0	38	7	0	0	63	8	3	0	0	0	0	0	0	0	0	
Beaver	32	30	0	0	68	10	0	0	42	19	50	0	2	0	0	0	0	0	0	
Fort Yukon	192	42	0	0	395	245	675	115	127	85	158	129	28	0	0	0	0	0	0	
Venetie	55	16	0	0	10	9	0	0	73	56	0	0	20	0	0	569	0	0	0	
Chalkyitsik	35	32	0	0	8	4	115	62	70	37	44	15	4	0	0	43	0	0	0	
District 5	517	228	0	0	5,507	855	9,447	699	907	134	1,852	291	190	3	0	744	95	1	15	
Survey Totals	2,596	963	9,189	2,511	33,468	5,211	36,793	4,543	22,459	4,669	19,159	2,908	6,704	2,580	5,401	1,578	128	206	302,623	

a Large whitefish are considered those 4 pounds or larger and small whitefish are less than 4 pounds.

b The number of households contacted per species may vary. The number of households indicated is the greatest number of households contacted for a given species.

Appendix G.2. Reported subsistence and personal use freshwater finfish harvest taken under authority of a permit, by permit area, Yukon Area, 1998.

Permit Fishing Area	Type	Permit ^a		Percent Returned	Number of Permits Returned that Fished	Reported Harvest ^a					
		Issued	Returned			Whitefish	Sheefish	Burbot	Pike	Suckers	Grayling
Subsistence Use											
Yukon River near Haul Road Bridge	SY	48	47	98%	31	486	30	4	8	0	0
Yukon River near Circle and Eagle	SE	101	95	94%	54	299	34	30	50	120	20
Tanana River Fishing Subdistrict 6A	SA	25	25	100%	15	141	25	52	74	88	0
Tanana River Fishing Subdistrict 6B	SB	94	84	89%	46	1,000	23	27	116	39	1
Tanana River Upstream of Subdistrict 6C	SU	46	46	100%	17	1,804	0	6	85	101	6
Kantishna River Fishing Subdistrict 6A	SK	6	6	100%	4	53	1	4	29	15	7
Tolovana River Pike	ST	70	64	91%	31	235	24	14	431	96	18
Subsistence Permit Subtotals		390	367	94%	198	4,018	137	137	793	459	52
Personal Use											
Tanana River Fishing Subdistrict 6C	PC	103	101	98%	52	1	0	0	0	0	3
Tanana River Whitefish	PW	1	1	100%	0	0	0	0	0	0	0
Personal Use Permit Subtotals		104	102	98%	52	1	0	0	0	0	3
Permit Totals		494 ^b	469	95%	250 ^c	4,019	137	137	793	459	55

^a Includes 1998 permit information received as of March 18, 1999.

^b Includes 45 households that were issued permits for two different areas, including 31 Minto households who were issued Tolovana River drainage (ST) pike permits.

^c Includes six households that fished in two different permit areas.

Appendix G.3. Commercial freshwater finfish fishery harvest, Lower Yukon Area, 1978-1998.

Year	Sheefish		Whitefish		Burbot		Pike	Lamprey	Blackfish
	Number	Pounds	Number	Pounds	Number	Pounds	Pounds	Pounds	Pounds
1978	0	0	19	87	0	0	0	0	0
1979	5	39	23	55	0	0	0	0	0
1980	283	2,265	78	250	0	0	0	0	293
1981	299	2,812	779	2,875	0	0	9	0	0
1982	754	6,161	1,633	6,214	102	482	0	0	0
1983	395	2,692	163	648	0	0	0	0	0
1984	94	762	794	2,362	0	0	0	0	0
1985	358	3,081	1,514	4,586	0	0	0	0	0
1986	0	0	1,533	5,845	0	0	0	80	0
1987	0	0	2,144	7,564	0	0	0	0	0
1988	0	0	696	2,171	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0
1990	0	0	180	260	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	95	640	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	157	471	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0
<hr/>									
5 year Average 1993-1997	0	0	31	94	0	0	0	0	0

Appendix G.4. Commercial freshwater finfish fishery harvest, Colville River, Northern Area, 1964-1998. ^a

Year	Broad Whitefish	Humpback Whitefish	Arctic Cisco ("kaktok")	Least Cisco ("herring")
1964	2,951 ^b	-	16,000	9,000
1965	3,000 ^b	-	50,000	-
1966	2,500 ^b	-	40,000	-
1967	-	-	-	-
1968	3,130	-	42,055	18,180
1969	-	-	-	-
1970	2,080 ^b	-	19,602	25,930
1971	3,815	132	38,016	22,713
1972	3,850	1,497	37,333	13,283
1973	2,161	-	71,569	25,188
1974	3,117	2,316	35,601	13,813
1975	2,201	1,946	28,291	20,778
1976	2,172	1,815	31,659	34,620
1977	443	1,431	31,796	14,961
1978 ^c	20	1,102	17,292	21,589
1979	0	1,831	8,684	24,984
1980	0	4,231	14,657	31,459
1981	1,035	469	38,206	16,584
1982	1,662	201	15,067	25,746
1983	0	408	18,162	35,322
1984	789	179	27,686	13,076
1985	401	191	23,679	17,595
1986	0	18	29,895	9,444
1987	5	1,989	24,769	10,922
1988	429	6,733	10,287	23,910
1989	71	6,575	17,877	23,303
1990	0	5,694	19,374	21,003
1991	0	1,240	13,805	5,697
1992	126	5,209	20,939	6,962
1993	20	5,339	31,310	6,037
1994	-	6,056 ^d	8,958	10,176
1995 ^f	-	6,000 ^g	14,824	-
1996	-	4,127 ^g	9,076	-
1997	-	4,760 ^g	9,403	-
1998 ^h	-	7,105 ^g	5,544	-
5 year Average				
1993-1997	-	5,256	14,714	-

^a Except as otherwise indicated, numbers reflect fish harvested with the intent of commercial sale. Dashes indicate information is not available.

^b Includes small numbers of humpback whitefish.

^c Reported harvest of 1 chinook, 2 sockeye, 9 chum, and 118 pink salmon.

^d Humpback whitefish includes undetermined amounts of broad whitefish.

^f From 1964 to 1994, the commercial harvest was based on a daily catch report. Catch reports were returned to the department following the fishing season. All fish reported on the catch report were harvested with the intent to sell. Fish tickets were often not generated at time of sale. Since 1995, the commercial harvest is based on fish ticket information.

^g Humpback whitefish includes undetermined amounts of broad whitefish and least cisco.

^h Preliminary information.

Appendix G.5. Commercial freshwater finfish fishery harvest, Upper Yukon Area, 1971-1998. ^a

Year	Healy Lake		Lake Minchumina		Tanana River				Yukon River			
	Whitefish		Whitefish		Burbot		Whitefish		Burbot		Whitefish	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1971			3,277	9,831	0	0	0	0	0	0	0	0
1972	2,605	3,950	718	2,154	0	0	0	0	0	0	0	0
1973	2,187	3,915	1,697	5,037	0	0	0	0	0	0	0	0
1974	1,885	3,390	854	2,562	0	0	0	0	0	0	0	0
1975	1,357	2,375	0	0	0	0	0	0	0	0	0	0
1976	1,440	2,625	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	1,336	2,306	0	0	0	0	0	0	0	0	0	0
1980	^b	^b	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	76	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	72	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	837	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	1	0	0	2,070
1990	0	0	0	0	1	0	809	0	0	0	985	2,078
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	921	1,400	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	908	1,160	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
5 year Average												
1993-1997	0	0	0	0	0	0	366	512	0	0	0	0

^a Numbers reflect fish harvested with the intent of commercial sale.^b Information not available.^c Requests for commercial whitefish fishing permits were denied because of the additional pressure placed on non-salmon species during poor salmon runs.

Appendix G.6. Freshwater finfish sales during the commercial salmon fishing season, by district and period, Lower Yukon Area, 1998.

District 1				
Period	Date	Number of Permits	Sheefish	Pounds
-	-	0	0	0
District 2				
Period	Date	Number of Permits	Sheefish	Pounds
-	-	0	0	0
District 3				
Period	Date	Number of Permits	Sheefish	Pounds
-	-	0	0	0
Lower Yukon Area				
Total		0	0	0

Appendix G.7. Freshwater finfish sales during the commercial salmon fishing season, by district and period, Upper Yukon Area, 1998.

District 4				
Period	Date	Number of Permits	Whitefish	Pounds
0	0	0	0	0
District 5				
Period	Date	Number of Permits	Whitefish	Pounds
1	7/23-7/24	2	116	88
Subtotal		2	116	88
District 6				
Period	Date	Number of Permits	Whitefish	Pounds
0	0	0	0	0
Upper Yukon Area				
Total		2	116	88

Appendix G.8. Freshwater finfish sales during the commercial salmon fishing season by district, Upper Yukon Area, 1988-1998.

Year	District 4		District 5				District 6	
	Whitefish		Whitefish		Sheefish		Whitefish	
	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1988	170	977	1,432	1,497	94	689	205	208
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	2,635	2,455	1,864	1,379 ^a	0	0	199	499
1993	0	0	59	48	0	0	140	300
1994	1	4	108	215	0	0	209	433
1995	0	0	95	95	0	0	183	387
1996	0	0	22	66	0	0	103	292
1997	0	0	270	301	0	0	4	8
1998	0	0	116	88	0	0	0	0
5 year Average 1993-1997	0	1	111	145	0	0	128	284

a The sale of 950 pounds of the total 1,379 pounds of whitefish sold did not include number of fish. Used the average weight (.74 lb to estimate number of fish.

Attachment 1. Regulation changes adopted by the Board of Fisheries in December, 1997.

This summary of actions is limited to selected proposals addressed by the Board of Fisheries during the December 2 through December 9, 1997 meeting in Fairbanks. *The following summary is for informational purposes only and is not intended to detail, reflect, or fully interpret reasons for the board's actions.*

Proposal 156. Reduce the hours that subsistence salmon fishing is closed prior to a fall season commercial fishing period.

5 AAC 01.210.(g)(1)(B) ADOPTED TO READ *after July 15, salmon may not be taken for subsistence for 12 hours immediately before, during, and for 12 hours after each commercial salmon fishing period.*

Proposal 157. Remove the subsistence salmon fishing restriction which prevents a subsistence salmon fisherman who is registered for the commercial set gillnet only area of District 1, from using drift gillnets for the taking of subsistence fish in Districts 1, 2 and 3.

5AAC 01.245.(a) REPEALED 6/10/98. *A CFEC salmon permit holder registered for the setnet only locations described in 5 AAC 05.330(a)(1)-(8) may not use drift gillnets for the subsistence taking of salmon in Districts 1, 2 and 3.*

Proposal 158. Remove salmon directed fishing gear as legal non-salmon fishing gear within the Yukon River and the lower portion of the Tanana River. Drift gillnets and fish wheels are primarily used to harvest subsistence salmon throughout the Yukon River drainage.

5 AAC 01.220.(f)(5) ADOPTED TO READ. *During the commercial salmon fishing season, within the Yukon River and the Tanana River below the confluence of the Wood River, drift gillnets and fish wheels may be used only during open subsistence salmon fishing periods.*

Proposal 161. Remove requirement that a regulatory marker be placed at the upstream mouth of Twenty-two Mile Slough within Subdistrict 5-D.

5 AAC 01.230.(3) AMENDED TO READ: *for the Yukon drainage from the upstream mouth of Twenty-two Mile Slough to the United States-Canada border.*

Proposal 162. 5 AAC 01.230. Allows the Department of Fish and Game to issue separate subsistence salmon and non-salmon household permits in order to reduce confusion on reporting harvests and to more closely follow the fishing patterns of individuals seeking specific species.

5 AAC 01.230.(d) AMENDED TO READ. *Only one subsistence salmon fishing permit will be issued to each household per year.*

Proposal 163. Eliminate the requirement that subsistence salmon fishermen remove the salmon dorsal fin during commercial fishing periods in Subdistricts 5-A, 5-B, and 5-C and in the lower portion of Subdistrict 5-D.

5 AAC 01.240.(b) REPEALED 6/10/98. *In Subdistricts 5-A, 5-B, 5-C and that portion of Subdistrict 5-D downstream from long point, no person may possess salmon taken for*

subsistence purposes during a commercial fishing period, unless the dorsal fin has been immediately removed from the salmon. A person may not sell or purchase salmon from which the dorsal fin has been removed.

Proposal 164. Clarify and modify the Yukon River subsistence fishing season regulation to reflect current management practices.

5 AAC 01.210.(b) AMENDED TO READ. *In the following locations, in addition to subsistence fishing periods opened by emergency order, salmon may be taken for subsistence during commercial salmon fishing periods, except that salmon may not be taken for subsistence during the 24 hours immediately before the opening of the commercial salmon fishing season.*

5 AAC 01.210.(c) AMENDED TO READ. *During the commercial salmon fishing season when the department announces a commercial fishing closure that will last longer than five days, salmon may not be taken for subsistence during the following periods in the following districts.*

5 AAC 01.210.(c)(2) AMENDED TO READ. *In District 4, excluding the Koyukuk River drainage, salmon may not be taken from 6:00 p.m. Friday until 6:00 p.m. Sunday.*

Proposal 165. **5 AAC 05.365, 5 AAC 05.310, 5 AAC 05.370, and 5 AAC 01.210.** Similar to the practice in Districts 4, 5, and 6, this proposal removed regulatory language that closes the commercial salmon season between the summer and fall runs in Districts 1, 2, and 3.

5 AAC 05.365.(1) DELETED Close Districts 1, 2, and 3 to commercial salmon fishing on July 15 and reopen by emergency order;

5 AAC 05.310.(1) AMENDED TO READ *in Districts 1, 2, and 3, the commissioner shall open, by emergency order, the season between June 5 and June 15; the season closes August 31, unless closed earlier by emergency order.*

5 AAC 05.370 was amended to reflect no closed commercial salmon season between the summer and fall salmon runs

5 AAC 01.210.(g)(1) AMENDED TO READ *In Districts 1, 2, and 3 (A) after the opening of the commercial salmon fishing season through July 15, salmon may not be taken for subsistence for 18 hours immediately before, during, and for 12 hours after each commercial salmon fishing period; (B) after July 15, salmon may not be taken for subsistence for 12 hours immediately before, during, and for 12 hours after each commercial salmon fishing period.*

Proposal 167. Re-authorize the Anvik River chum salmon fishery management plan. The plan was adopted without the sunset clause.

5 AAC 05.368.(7) REPEALED 6/10/98. *The provisions of this section do not apply after April 29, 1998.*

Proposal 168. **5 AAC 01.210 and 5 AAC 05.367.** Update existing regulatory language for the Tanana River commercial and subsistence fishing periods and season opening to provide for consistency between regulations and to more accurately reflect current management practices.

5 AAC 05.367. TANANA RIVER SALMON MANAGEMENT PLAN.
AMENDED TO READ *The purpose of this management plan is to provide management guidelines for the sustained yield management of the Tanana River salmon resource. Except as provided in 5 AAC 01.248, the department shall manage the District 6 Tanana River salmon fisheries as follows.*

Proposal 171. Recommend the removal of some of the Toklat River rebuilding plan's restrictions on commercial and subsistence fishing in 1998 and 1999. A motion carried to adopt board generated substitute language RC96. RC96 added wording that if the biological escapement goal is not met in 1998, the entire rebuilding plan would be effective for 1999.

5 AAC 01.248 ADOPTED TO READ.

(c) *In 1998 and 1999, the provisions of (a)(2)-(5) do not apply. In 1998 and 1999, the department shall continue to use management strategies to assist Toklat River drainage salmon reach the spawning grounds, including conservative management of the commercial fisheries when Toklat River drainage salmon stocks are significantly present.*

(d) *Notwithstanding (c) of this section, if the minimum biological escapement goal is not attained in the Toklat River drainage index area in 1998, the provisions of (a)(2)-(5) will apply in 1999.*

(e) *The provisions of this section do not apply after December 31, 2000.*

Proposal 172. Re-authorize the Yukon River fall chum salmon management plan with no sunset clause. There was agreement between lower river and upper river fishers, that if the lower river did not go commercial fishing, the upper river could not go commercial fishing. Although a provision to strongly consider terminal directed fisheries after the year 2000 was added.

5 AAC 01.249.(8) ADOPTED TO READ *the provisions of this section do not apply after December 31, 2000.*

Proposal 177. Prohibit the sale of king salmon roe in Yukon River Subdistrict 4-A.

5 ACC 05.360.(b) ADOPTED *A person may not sell king salmon roe taken in Subdistrict 4-A.*

Proposal 178. Convert the Yukon River king salmon guideline harvest ranges into a management plan format without making any substantive changes.

5 ACC 05.360. AMENDED TO READ. (a) *The department shall manage the Yukon River commercial king salmon fishery for a guideline harvest range of 67,350 to 129,150 king salmon, distributed as follows:*

Proposal 183. Clarify the district registration notification process as to when the 72-hour waiting period begins in the Yukon River.

5 ACC 05.370.(b) AMENDED TO READ. *After initial registration for Districts 1, 2, and 3, a CFEC limited entry or interim-use salmon permit holder may take salmon in another district following reregistration for the district of intended operation. However, the permit holder may not take salmon in any district during the 72-hour period following registration. District reregistration is accomplished when the permit holder contacts a local representative of the department and furnishes any information requested to the representative. There registration and 72-hour waiting period begins at the time that notification is received and noted by the department. Only one registration is allowed before July 15.*

Proposal 184. In the Yukon River commercial salmon fishery, allow District 3 vessels to reregister for Districts 1 or 2, after a 72-hour waiting period.

5 ACC 05.370. (c) REPEALED 6/10/98. *A permit holder who is registered to fish in District 3 may not take salmon in District 1 or 2 until after July 10.*

Proposal 185. 5 AAC 05.370. REGISTRATION AND REREGISTRATION. Establish reregistration criteria with a 72-hour waiting period in the set gillnet only fishing area in Yukon River District 1.

5 AAC 05.370. AMENDED TO READ (i)(2) *after initial registration for the set gillnet only area, a permit holder may take salmon in the remaining locations of District 1, or in Districts 2 or 3 following re-registration; however, the permit holder may not take salmon in any district during the 72-hour period following reregistration; district reregistration is accomplished when the permit holder contacts a local representative of the department and furnishes any information requested to the representative;*

Proposal 186. Remove the requirement for Districts 1, 2, 3 and 5, and Subdistricts 4-B, 4-C, 6-A and 6-B to report, on a fish ticket, the number of salmon taken but not sold during commercial salmon fishing periods.

5 ACC 05.377. AMENDED TO READ. *In Subdistrict 6-C, each commercial salmon fishermen shall report, on an ADF&G fish ticket, the number of salmon taken but not sold during each commercial salmon fishing period.*

Proposal 187. 5 AAC 01.220, and 5 AAC 05.335. In the Yukon River, apply the same restrictions on the simultaneous use of personal use and commercial fishing gear as with the simultaneous use of commercial and subsistence gear. Restrictions include fishermen may not operate more than one type of gear at a time, for commercial, personal use or subsistence purposes and restrictions on minimum distance between units of gear.

5 ACC 01.220.(f)(1) AMENDED TO READ *a commercial fishermen may not operate more than one type of gear at the same time, for commercial, personal use, and subsistence purposes;*

5 AAC 05.335.(c) AMENDED TO READ *In Districts 4, 5, and 6, a person may not set or operate commercial fishing gear within 200 feet of other commercial, personal use, or subsistence fishing gear, except as follows:*

Proposal 188. In the Yukon Area, clearly list regulations that affect the subsistence fishery, which are applicable to the personal use fishery under the personal use regulations. The personal use regulations would apply within the Fairbanks Nonsubsistence Use Area.

Proposal 189. In the Yukon Area, specify that smelt may only be taken for commercial purposes under authority of a permit.

5 AAC 05.510. AMENDED TO READ. *Smelt may be taken in the Yukon-Northern Area only under the conditions of a permit issued under 5 AAC 39.780.*

Proposal 166. **5 AAC 01.XXX and 5 AAC 70.010- 70.050.** In the Yukon-Northern Area, develop a northern pike management plan for subsistence and sport fisheries in Minto Flats.

5 AAC 01.244. ADOPTED. *Minto Flats Northern Pike Management Plan.*